PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS

DISSERTATION SUBMITTED FOR

MASTER OF SURGERY

BRANCH - I (GENERAL SURGERY)

APRIL 2017

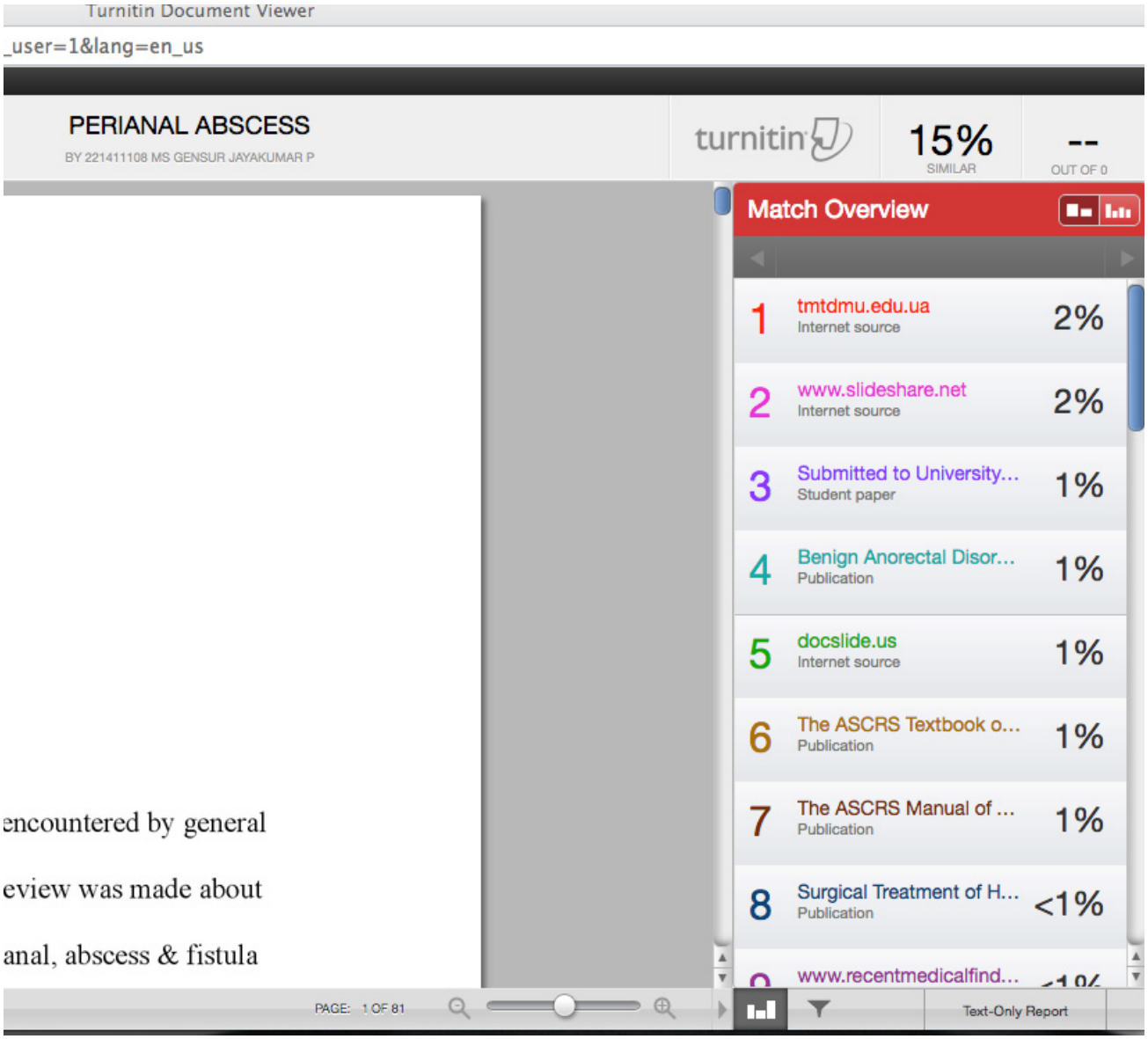
BY

Dr.P.JAYAKUMAR

THE TAMILNADU

DR.M.G.R. MEDICAL UNIVERSITY

CHENNAI


Turnitin Document Viewer
_user=1&lang=en_us
PERIANAL ABSCESS
BY 221411108 MS GENSUR JAYAKUMAR P
turnitin
15%
SIMILAR
--
OUT OF 0
encountered by general
eview was made about
anal, abscess & fistula
PAGE: 1 OF 81
Match Overview
1 tmtdmu.edu.ua Internet source 2%
2 www.slideshare.net Internet source 2%
3 Submitted to University... Student paper 1%
4 Benign Anorectal Disor... Publication 1%
5 docslide.us Internet source 1%
6 The ASCRS Textbook o... Publication 1%
7 The ASCRS Manual of ... Publication 1%
8 Surgical Treatment of H... Publication <1%
www.recentmedicalfind...
Text-Only Report

MADURAI MEDICAL COLLEGE
MADURAI, TAMILNADU, INDIA -625 020
(Affiliated to The Tamilnadu Dr.MGR Medical University,
Chennai, Tamil Nadu)

ETHICS COMMITTEE CERTIFICATE

Name of the Candidate	:	Dr.P.Jeyakumar
Course	:	PG in MS., General Surgery
Period of Study	:	2014-2017
College	:	MADURAI MEDICAL COLLEGE
Research Topic	:	"Prospective study on development of perianal Fistula following incision and drainage for perianal abscess".
Ethical Committee as on	:	27.07.2016

The Ethics Committee, Madurai Medical College has decided to inform that your Research proposal is accepted.

Member Secretary Chairman Dean / Convenor

DEAN
Madurai Medical College
Madurai-20

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "**PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS**" submitted by **Dr.P.JAYAKUMAR** to The Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the requirement for the award of M.S. Degree Branch I (General Surgery), is a bonafide research work carried out by him under my direct supervision & guidance.

Prof.DR.D.MARUTHUPANDIAN, M.S.,FICS.,FAIS.,
Professor & Head of the Department,

Department of General Surgery,

Madurai Medical College, Madurai-20.

DEAN

MADURAI MEDICAL

COLLEGE MADURAI

CERTIFICATE BY THE DEAN

This is to certify that the dissertation entitled "**PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS**" is a bonafide research work done by **DR.P.JAYAKUMAR.,** Post Graduate Student, Department of General Surgery, MADURAI MEDICAL COLLEGE AND GOVERNMENT RAJAJI HOSPITAL, MADURAI, under the guidance and supervision of **PROF.DR.D.MARUTHUPANDIAN., M.S**.,FICS.,FAIS., Professor & HOD, Department of General Surgery, MADURAI MEDICAL COLLEGE AND GOVERNMENT RAJAJI HOSPITAL, MADURAI.

DATE:

PLACE: MADURAI

Dr. VAIRAMUTHURAJA, MD.,

DEAN

MADURAI MEDICAL COLLEGE

DECLARATION

I, Dr **.P.JAYAKUMAR** declare that, I carried out this work on "**PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS**" at the Department of General Surgery, Govt. Rajaji Hospital during the period of June2016 to July 2017. I also declare that this bonafide work or a part of this work was not submitted by me or any others for any award, degree and diploma to any other University, Board either in India or abroad.

This is submitted to The Tamilnadu Dr.M.G.R.Medical University, Chennai in partial fulfillment of the rules and regulations for the M.S. degree examination in General Surgery.

Place: Madurai

Date: Dr **.P.JAYAKUMAR**

ACKNOWLEDGEMENT

At the outset, I wish to thank our Dean **Dr.VAIRAMUTHURAJA,MD.,**for permitting me to use the facilities of Madurai Medical College and Government Rajaji Hospital to conduct this study.

I thank sincerely**,**

Prof.DR.S.MARUTHUPANDIAN, M.S.,FICS.,FAIS., My unit Chief, Professor and Head of the Department, Department of General Surgery for his valuable advice and cooperation in completing this study. He has always guided me, by example and valuable words of advice and has given me her moral support. I will be ever grateful to him.

I offer my heartfelt thanks to my unit Assistant Professors **Dr.D.LATHA, M.S.,DA., Dr.C.SARAVANAN, MS.,D.ORTHO., Dr.THIRUMALAIKANNAN, MS.,DCH., Dr.VANITHA, MS.,DGO., Dr.MUTHUKUMAR, MS.,MCH.,** for their constant encouragement, timely help and critical suggestions throughout the study and also for making my stay in the unit both informative and pleasurable.

My patients, who form the most integral part of the work, were always kind and cooperative. I pray to God give them courage and strength to endure their illness, hope all of them go into complete remission.

Place: Madurai. Dr **.P.JAYAKUMAR**

Date: Post Graduate Student, Department of General Surgery,

Madurai Medical College, Madurai.

ABSTRACT

BACKGROUND AND OBJECTIVES:

Perianal Fistula formation following incision and drainage of the perianal abscess is not an uncommon problem.Several factors influences the fistula formation. Younger Age, Antibiotic use following abscess drainage, Fecal organism in abscess and Antiseptic solution mixed sitz bath are associated with increased risk of fistula formation. Immunocompromized states, Skin organism in abscess and Plain tap water for sitz bath are associated with decreased risk of fistula formation. In this study we try evaluate the factors influencing fistula formation, particularly plain tap water for sitz bath vs antiseptic solution mixed sitz bath.

METHODOLOGY:

45 cases of perianal abscess visited to Out Patient Department of Govt. Rajaji hospital, Madurai were included into the study. All were underwent Incision and Drainage for the abscess and followed till the wound healing or for 3 months. Patients excluded from the study are Chrons disease, known fistula, multiple abscesspatients and If the wound not healed for 3 months after drainage. Randomly plain tap water sitz bath and antiseptic mixed tap water sitz

bath was recommended. Clinical and laboratory parameters were collected on the first visit. Wound evaluated on need basis till the wound heals

RESULTS:

Total of 45 patients were included in the study, among them 13 patients were females and 32 were males.Among the 45 patients drained for perianal abscess 14 developed perianal fistula and the remaining 31 wound healed without fistula formation.

Abscess cavity depth of >3cm after drainage associated with fistula formation 42.9%(12) compared to 11.8%(2) in patients with<3cm cavity with significant p value of 0.03.

When >15ml of pus drained associated with fistula formation 52.9%(9) compared to 17.9%(5) in <15 ml pus drained patients with significant p value of 0.01.

Fecal organism in culture associated with 56.5%(13) of fistula formation compared with 4.5%(1) in skin organisms in culture with significant p value of <0.001.

CONCLUSION:

We conclude that Depth of abscess cavity, amount of pus drained and Fecal organism in culture increases the chance of fistula formation. Where as Plain tap water for sitz bath redues the chance for fistula formation.

LIST OF ABBREVIATIONS

DM	Diabetes Melitus
HT	Hypertension
HIV	Human Immunodeficiency virus

TABLE OF CONTENTS

INTRODUCTION

Perianal abscess is one of the common problem encountered by general surgeons in clinic or hospital settings. Here the review was made about the perianal abscess including anatomy of anal canal, abscess & fistula formation, factors influencing and treatment for the abscess and fistula. We studied the factors influencing perianal fistula formation in our institution.

REVIEW OF LITERATURE

PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS

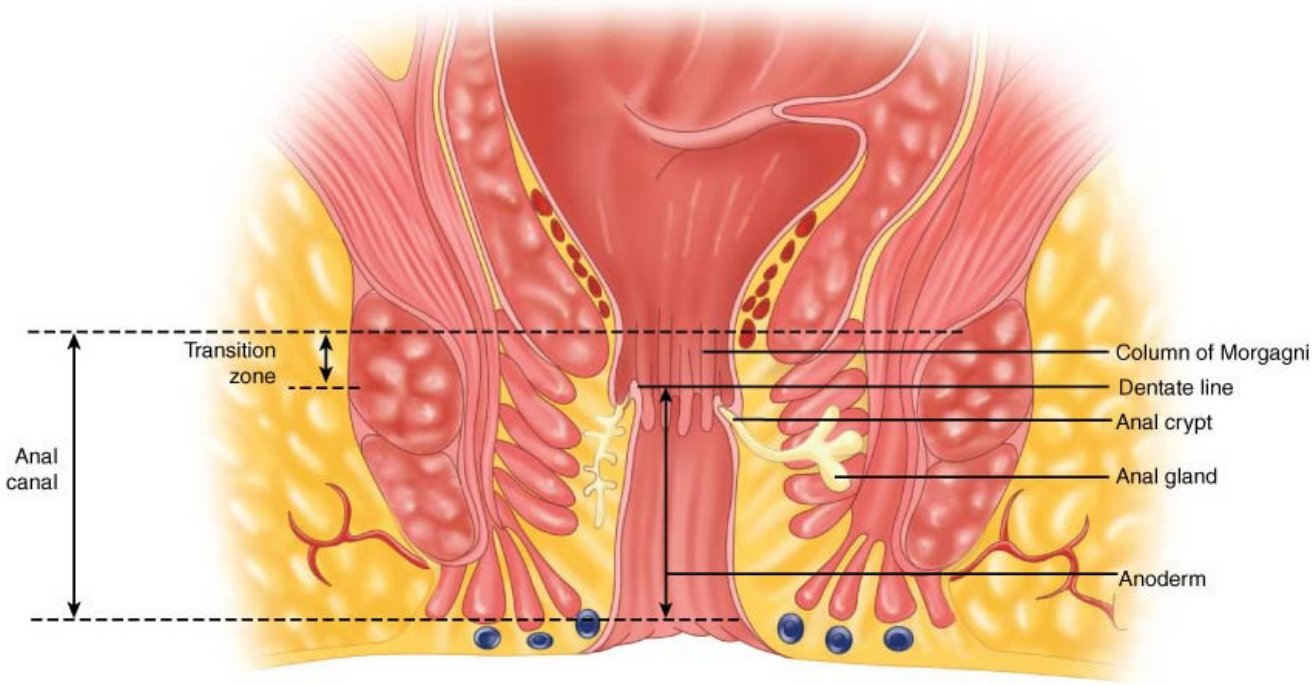
Anatomy Of Anal Canal and Perianal Region

Gastrointestinal tract ends at anus, which provides continence for feces and flatus. The Anus and the surrounding considered as a single unit called Anorectum, which consists of distal rectum, anal canal, anal sphincters and perianal skin.

The anal canal is 3 to 4 cms long funnel shaped extension of the pelvic floor muscles and distal rectum. Distal rectal circular smooth muscle fibers thickened to form the internal anal sphincter. The main anatomic reference points are anal verge, dentate line, and anorectal ring. The junction between the anal and perianal skin is the distal external boundary of the anal canal called anal verge,. The cephalad border of anal canal is true mucocutaneous junction called dentate line. The anorectal ring is upper border of the anal sphincteric complex, which is palpated about 1.0–1.5 cm above the dentate line in digital rectal examination.

Anatomical anal canal to begins at dentate line and ends at anal verge. Surgical anal canal begins at the anorectal ring and terminates at anal verge.

Anal epithelium is devoid of the hair follicles, sebaceous glands and apocrine glands. Which is present in the perianal skin, it is fact worth remembering when attempting to distinguish hidradenitis (which is inflammation of the apocrine glands in perianal skin) Vs cryptoglandular anal disease.



The embryonic ectoderm union with the endodermal gut resides 1.0–1.5 cm above the anal verge. The transitional zone of the columnar epithelium of the rectum changes to cuboidal epithelium which is 6–12 mm in length, which joins squamous epithelium in dentate line.

Rectal columns are longitudinal folds of rectal mucosa, which is 8–14 in number, which is just above the dentate line. Anal crypt is a small pocket between two columns in the dentate line.

Small rudimentary anal glands open in some anal crypts but not in all crypts. This glands may extend into the internal sphincter and the intersphincteric plane, but not into the external sphincter.

Afferent fibers of the inferior rectal nerves convey cutaneous sensations of heat, cold, touch, and pain below the dentate line. Parasympathetic fibers present cephalic to dentate line carried poorly defined dull sensations which will be elicited during the mucosa is pinched or internal hemorrhoids are ligated.

Both sympathetic nerves and parasympathetic nerves supplied the anorectum. The inferior mesenteric plexus formed below the inferior mesenteric artery by sympathetic nerves from thoracolumbar segments. The above said fibers descend to superior hypogastric plexus and located inferior to aortic bifurcation. The hypogastric nerves formed by purely sympathetic fibers bifurcation and descend. Hypogastric plexuses are formed by parasympathetic fibers of S2, S3 & S4 (the Nervi erigentes) and the hypogastric nerves which is joining anterolateral to the rectum. The prostate, bladder, rectum, penis, and internal anal sphincter are innervated by these mixed fibers from the above said plexuses. The motor supply to the internal sphincter is by sympathetic innervation and the inhibitory supply is by parasympathetic innervation. Injury

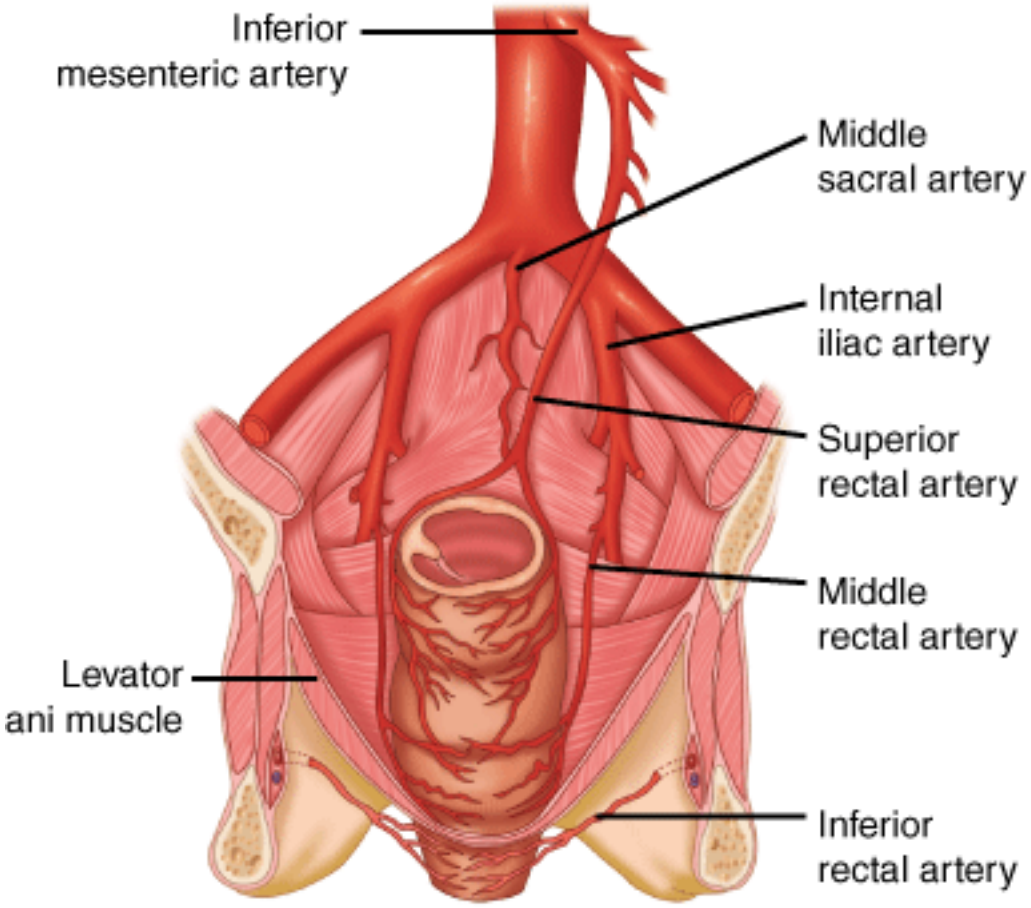
during pelvic surgery to pelvic autonomic nerves results in bladder dysfunction, impotence, or both.

The pelvic floor muscles voluntary innervation is by direct fibers from S2, S3 & S4 from the sacrum. The external sphincter nerves are derived from S2, S3 & S4 nerve roots from sacral plexus and they arrive to external sphincter via the pudendal nerve around the ischial spine in Alcock's canal.

VASCULAR SUPPLY OF ANORECTUM

Superior rectal artery from terminal branch of the inferior mesenteric artery supplies the upper rectum. *Middle rectal artery* from the internal iliac; the presence & size of these arteries are highly variable. I*nferior rectal artery* arise from internal pudendal artery is a branch of internal iliac artery.

The terminal arterioles of these each arteries form rich network of collaterals and makes the rectum relatively resistant to ischemia.



Venous drainage of rectum accompanies the arterial supply. *Superior rectal vein* draining into the portal system through the inferior mesenteric vein. M*iddle rectal vein* draining into internal iliac vein. I*nferior rectal vein* draining into internal pudendal vein which subsequently drains into the internal iliac vein. Submucosal plexus which is deep to the columns of Morgagni forms *hemorrhoidal plexus which is* draining into all the three veins.

LYMPHATIC DRAINAGE OF ANORECTUM

Rectal lymphatic drainage parallels the vascular supply. The upper and middle rectal lymphatic channels drains superiorly in the inferior mesenteric lymph nodes. Lower rectal lymphatic channels drains into both the inferior mesenteric

lymph nodes superiorly and internal iliac lymph nodes laterally. Anal canal has a complex pattern of lymphatic drainage. Lymphatic drainage proximal to dentate line is by both inferior mesenteric lymph nodes and internal iliac lymph nodes. Distal to dentate line lymph primarily drains into inguinal lymph nodes. But it is also can possible to drain into inferior mesenteric lymph nodes and internal iliac lymph nod**es.**

Bacterias in colonic content:-

- Around 30% of fecal dry weight is made up of bacteria
- Anaerobes are the most common organism forming the microflora which includes Escherichia coli, Clostridium difficile, etc.

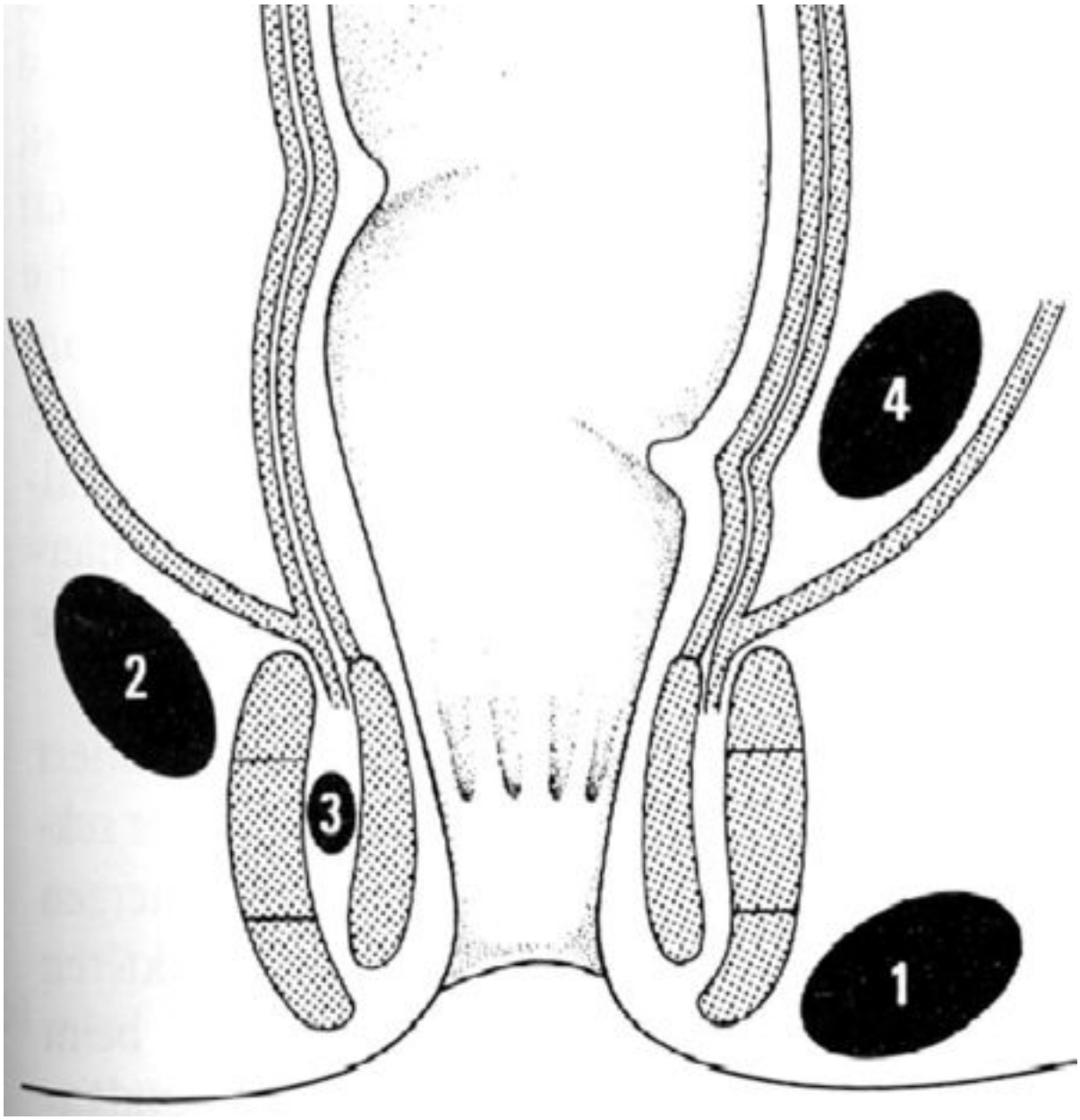
Skin Organisms:-

- Streptococcus
- Staphylococcus, etc

Anorectal Sepsis / Cryptoglandular Abscess or Perianal Abscess

The anorectal suppurative disease or abscess developed from infections of the anal glands (cryptoglandular infection) which is found in intersphincteric plane. The ducts traverse through the internal sphincter and empty into anal crypts at the dentate line. This cryptoglandular infection results in the abscess formation

that may enlarge and spread along one or several planes in perianal and perirectal spaces. *Perianal space around* the anus laterally continuous with the ischiorectal fossa that is fat of the buttocks. The space between internal and external anal sphincters *is called intersphincteric space* and it continuous with perianal space distally and extends proximally into the rectal wall. *Ischiorectal fossa* is located lateral and posterior to anus and its boundaries are superiorly by levator ani, inferiorly by transverse septum, medially by external sphincter and laterally by ischium. The contents of ischiorectal space are inferior rectal vessels and the lymphatics. The *deep postanal space* was formed by two ischiorectal spaces connect posteriorly and above the anococcygeal ligament just below the levator ani muscle. Just above the levator ani either side of the rectum *supralevator spaces* lies and communicates posteriorly. The cryptoglandular infection spread influenced by the anatomy and location of the spaces. P*erianal abscess* manifests as a painful swelling around the anal verge. Sometimes abscess may be extremely large and may not be visible around the anal verge. Perrectal examination may reveal a bulge laterally in ischiorectal fossa. *Intersphincteric abscesses may be* difficult to diagnose sometimes, which occur in intersphincteric space needs anesthesia for examination. *Pelvic* and *supralevator abscesses* are rare which may extend from an intersphincteric or ischiorectal abscess upward or from an intraperitoneal abscess downward.



CLINICAL FEATURES:-

- Severe perianal pain is the common presenting complaint. The pain is aggravated by Walking, coughing and straining.
- A mass may be seen perianally by inspection or palpable during digital rectal examination.

- Fever is another most common symptom
- Occasionally present with urinary retention or life threatening sepsis.
- Sometimes abscess may burst before the patient reaching the hospital

DIAGNOSIS:-

- Perianal abscess diagnosed mainly by clinical examination alone
- Pus may aspirated via wide bore needle
- Atypical and complex presentations may require imaging of MRI or CT to delineate the anatomy of the abscess.

TREATMENT:-

- Main treatment of perianal abscess is by surgical drainage.
- In doubtful diagnosis examine the patient under anesthesia and drain the abscess once confirmed.
- Delay in treatment may results in extensive tissue necrosis and septicemia.
- Conservative management with antibiotics alone is ineffective

- Antibiotics indicated in patients with associated valvular heart disease, immunocompromised, diabetes mellitus or with extensive cellulitis.

- Abscess drainage usually done under local anesthesia and it can be done in emergency setup, clinic or at office.

- Complicated or large abscess may require drainage at operation theatre with regional or general anesthesia

Perianal Abscess drainage:-

- A large cruciate skin incision and subcutaneous incision was made over the prominent part of abscess.

- Dog-ears are excised to avoid premature closure of skin edges.

- Packing the wound is not necessary

- Sitz bath will be started on the next day

Ischiorectal Abscesses drainage:-

- Simple abscess require drainage over the maximum fluctuation in the affected side

- Horseshoe abscesses require counterincisions over one or both ischiorectal spaces and drainage of postanal deep space

Intersphincteric Abscess drainage:-

- They are the which is difficult to diagnose one and which requires anesthesia for examination due to severe pain which makes per rectal examination very difficult and pain is at up inside.
- Drained through posterior internal spincterotomy

Supralevator Abscess drainage:-

- If the abscess deveop from interspincteric abscess it will be drained through per rectally
- Abscess developed from ischiorectal fossa will be drained through ischiorectal fossa
- Abscess develop from intraabdominal source will be drained through intaabdominally or per rectally or through ischiorectal fossa

Fistula in Ano

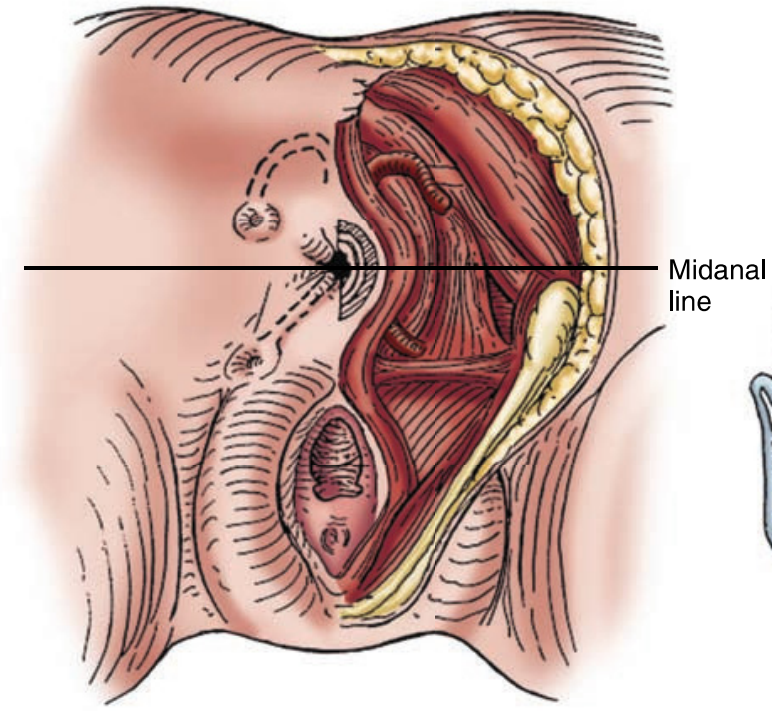
- It is a communication tract after abscess drainage between *internal opening* (infected crypt) and to the *external opening*, usually the prior drainage site

- Perianal abscess drainage results in cure for around 50% of patients and 50% will develop a persistent *fistula in ano*
- Epithelized tract formation during granulation of the wound is the main reason for fistulous tract formation
- Although the main theory of fistula formation is cryptoglandular in origin but other causes like Crohn's disease, trauma, radiation, malignancy, or infections (like actinomycosis, tuberculosis, and chlamydia) also contribute and cause for fistula formation.

Clinical Features:-

- Persistent drainage perrectum or perirectally is the most common presentation with past history of burst abscess or drained abscess
- Pain may be associated in infected fistulas

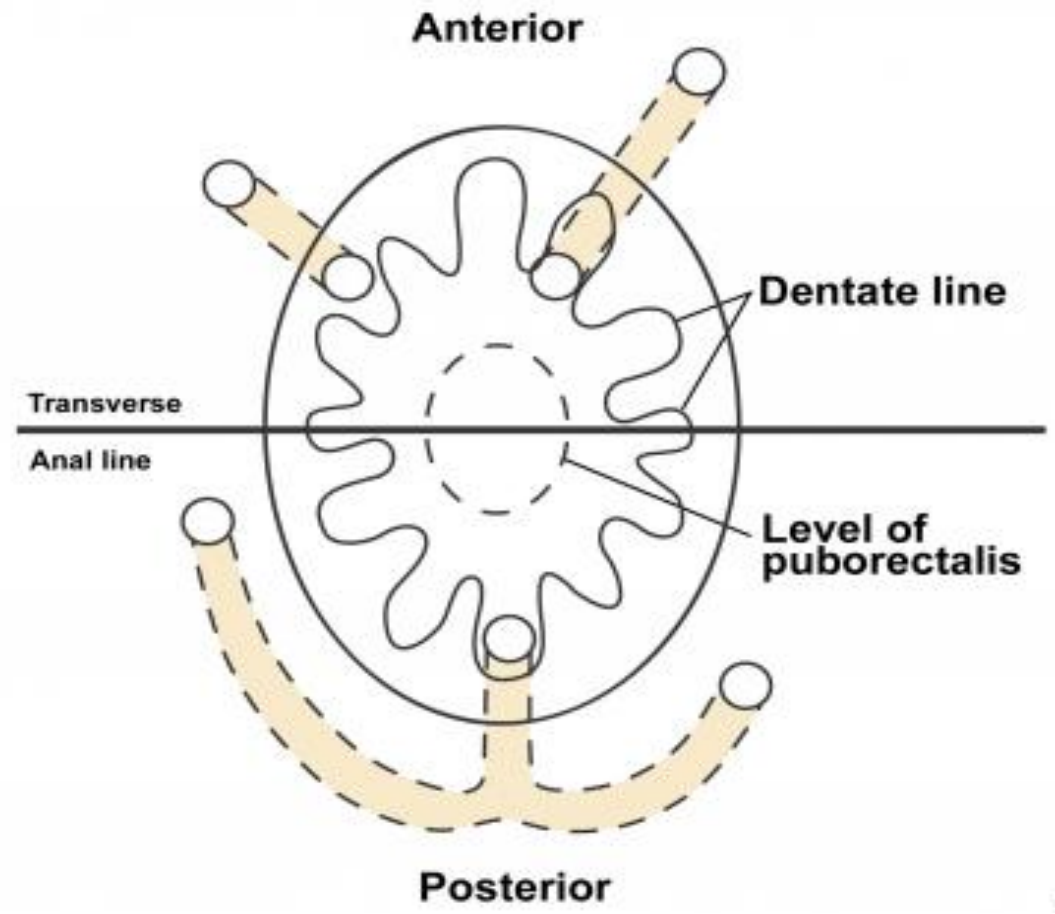
- An induration is often palpable with the external opening which is easily visible, the identification of internal opening may be more difficult.



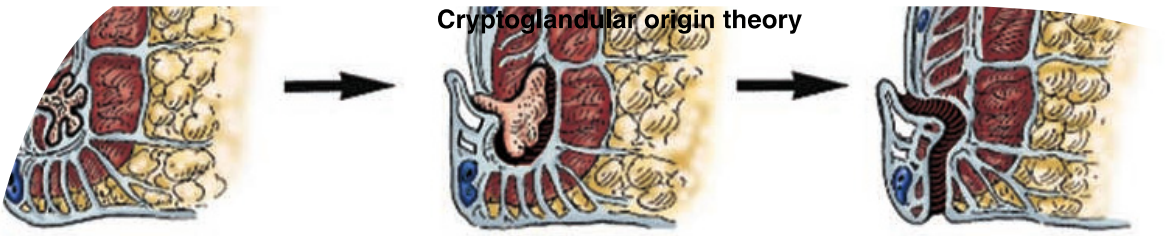
Goodsall's rule

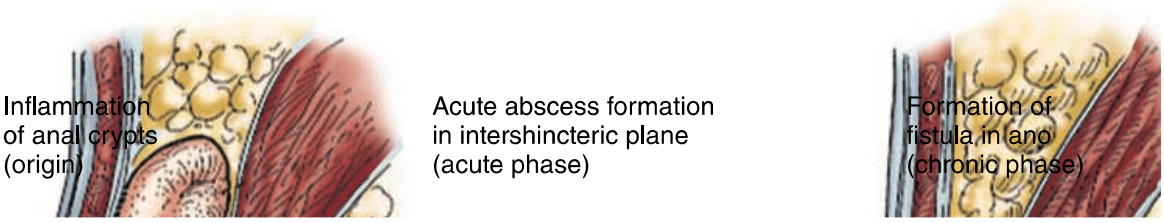
Fistulas with external openings anterior to midanal line connected to internal opening by short, straight tract. Posterior external openings follow curved course to internal opening in posterior midline

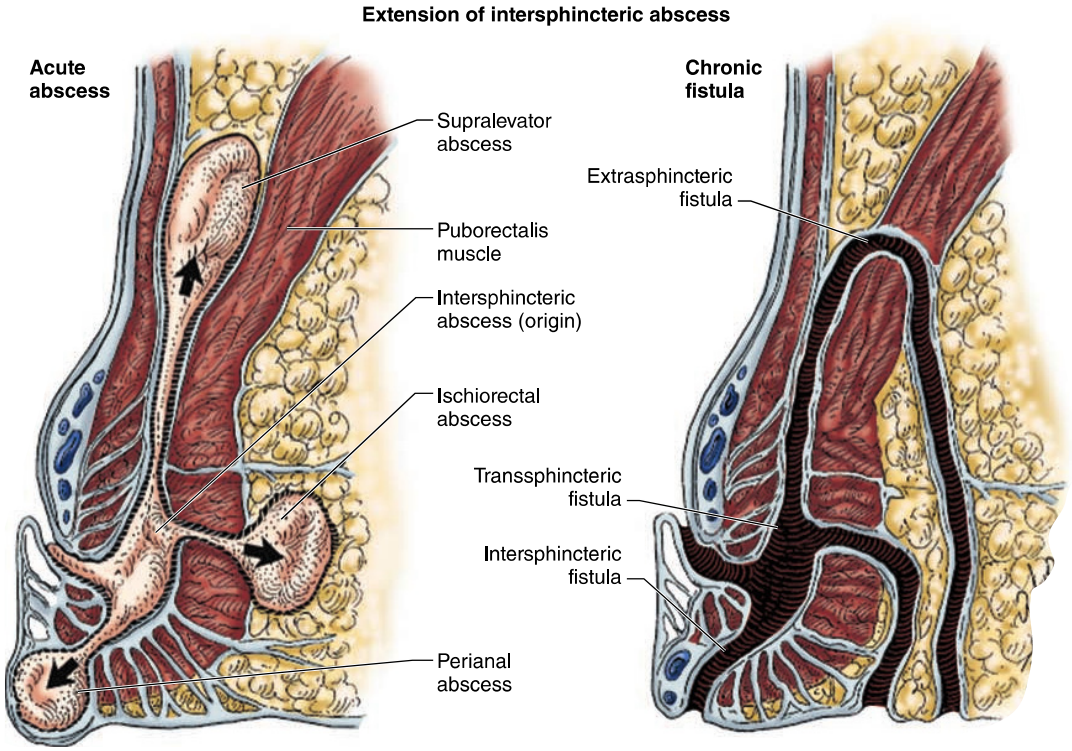
- **Goodsall's rule:** Generally fistulas with an external opening *anteriorly will* connect to the internal opening by a *short and radial tract*. Fistulas with an external opening *posteriorly will* track in a *curvilinear fashion to the posterior midline*. Exceptions to this rule occur if an anterior external opening is more than 3 cm from the anal verge, which track to the posterior midline usually.



- **Fistula types are based on their relationship to anal sphincter complex**

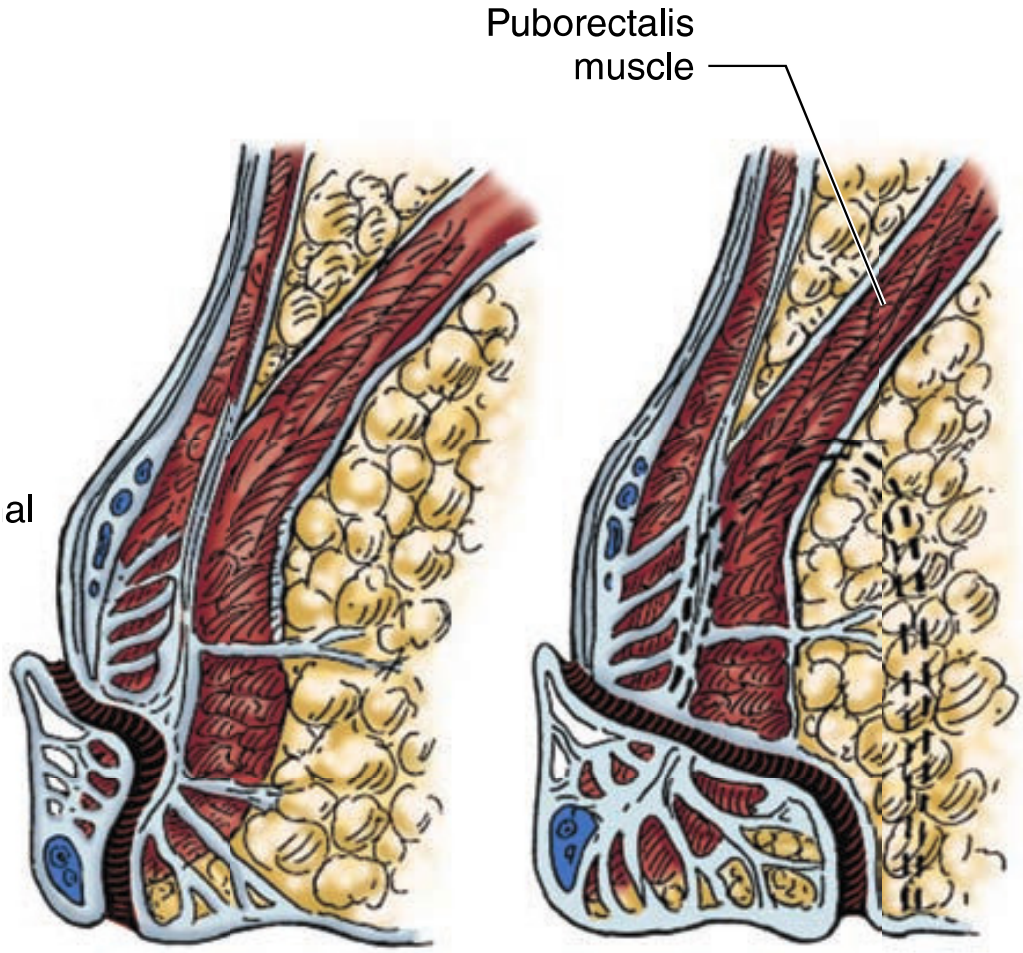






Upward extension of acute inflammation results in supralevator abscess; lateral in ischiorectal abscess; and downward in perianal abscess

Chronic inflammation results in communication of abscess sites with surface, causing fistulas

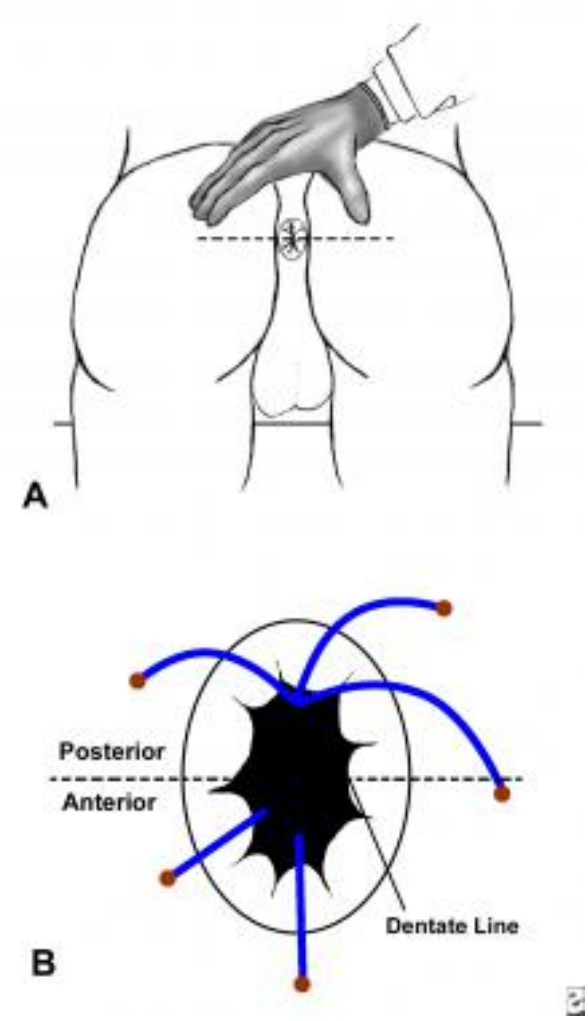


- **Fistula Types 1)** ***Intersphincteric fistula***

2) ***Transsphincteric fistula***

3) ***Suprasphincteric fistula***

4) ***Extrasphincteric fistula***



- ***Intersphincteric fistula –*** Which tracks through distal internal sphincter and intersphincteric space to the external opening which nears the anal verge

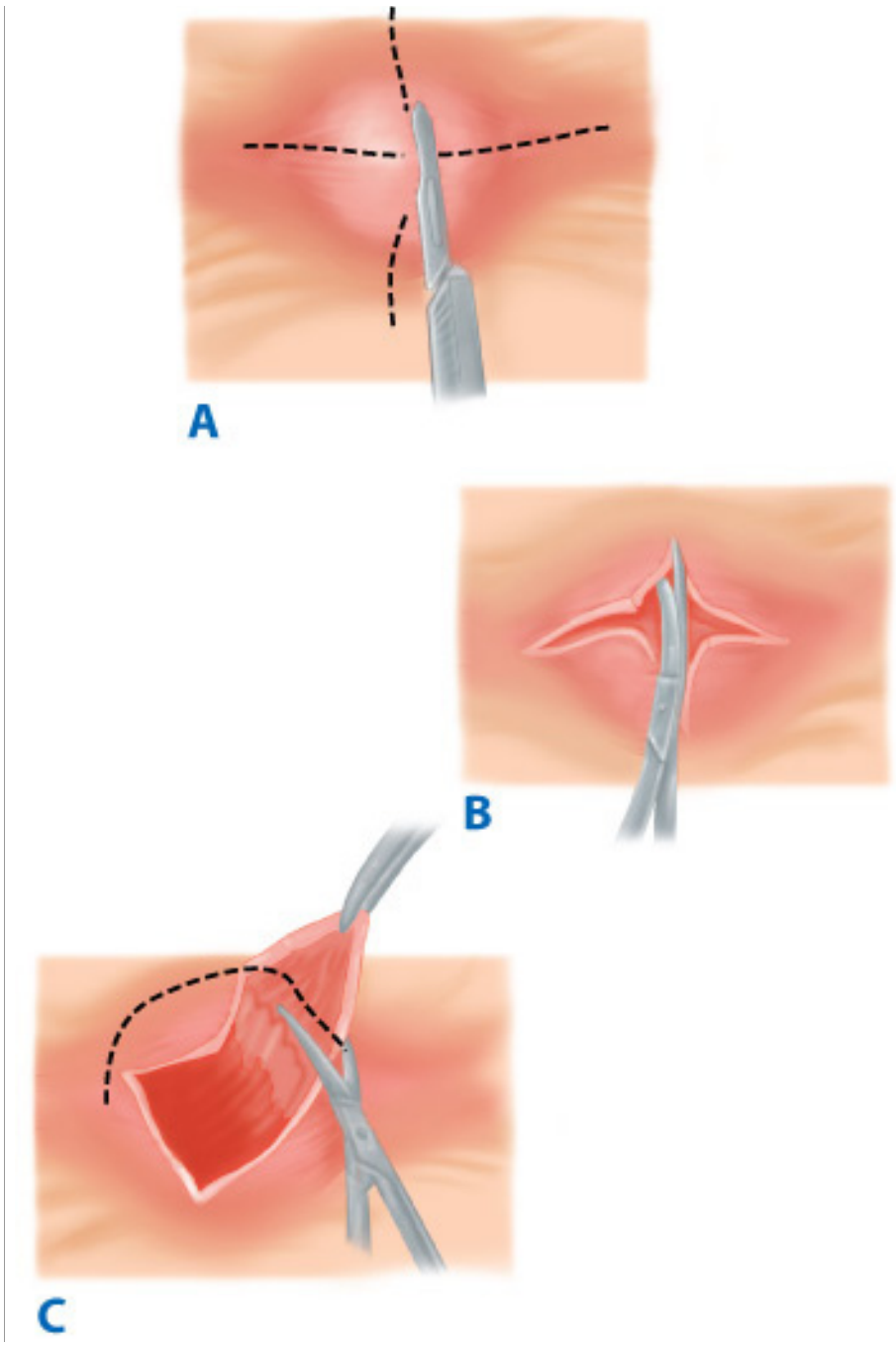
- ***Transsphincteric fistula -*** Fistula which track through the both internal and external sphincters, which often results from the ischiorectal abscess

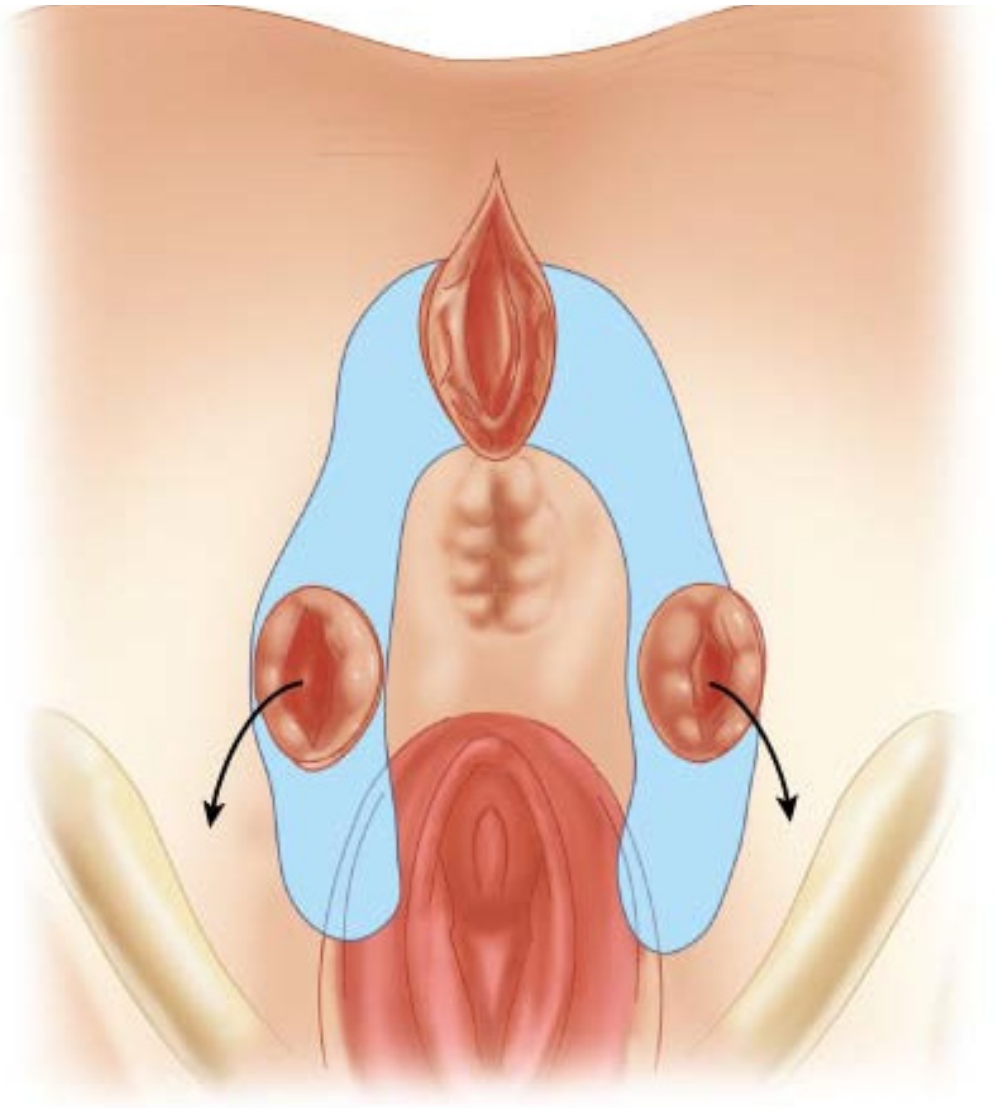
- ***Suprasphincteric fistula –*** *which* originates from the intersphincteric plane, tracks up and around the entire external sphincter

- ***Extrasphincteric fistula -*** *which* originates from the rectal wall then tracks around both sphincters to exit laterally, which usually present in the ischiorectal fossa

TREATMENT

- The main stay of treatment is eradication of sepsis with its track without sacrificing continence of anal canal in fistula in ano.
- Variable amounts of the sphincter complex encircled in the fistulous tracks, surgical treatment should be decided by the location of the internal and external openings of the fistula and its course
- External opening usually visible as a red granulation tissue with elevation and with or without associated drainage. Internal opening is more difficult to identify. Injection of dilute methylene blue or hydrogen peroxide may be useful in the presence of internal opening.


A
B
C



- We should take care to avoid in creating an artificial internal opening (results in converting simple fistula to a complex one)
- Intersphincteric fistulas - simple type will be treated by *fistulotomy* (simple opening the fistulous tract), curettage, which heals by secondary intention
- Fistulas involve less than 30% of sphincter muscles can be treated by sphincterotomy without the risk of major incontinence

- *Setons are used to treat* high transsphincteric fistulas, which includes greater amount of muscle

- S*eton* is a drain placed in the fistula to maintain drainage and to induce fibrosis, which may be a cutting one for trans-sphincteric fistula or non cutting one used for drainage purpose

- Extrasphincteric fistulas treated based on the anatomy and etiology of the fistula. Fistula outside the sphincter should be treated by opening and drainage. A primary tract in the level of dentate line also can be opened, if present. Complex fistulas with multiple tracts require numerous procedures for control of sepsis and to facilitate healing , use of drains and setons are helpful.

- Failure of these measures may ultimately requires fecal diversion

- Biopsy is done from the fistulus tract to rule out malignancy

HIDRADENITIS SUPPURATIVA OF PERIANAL REGION

- It is a chronic suppurative condition of apocrine gland bearing perianal skin

- Main pathology is occlusion of apocrine gland ducts which leads to bacterial proliferation with Staphylococcus aureus, Streptococcus milleri & anaerobes, gland rupture with spread of the infection and epithelial components to the surrounding tissue and to the adjacent glands, results in skin damage and deformity, with multiple subcutaneous fistulae.
- Some evidences support that the disease may be associated to relative androgen excess
- Common before puberty and rare after fourty years
- Obesity and male gender are predisposed for this problem
- **Differencial Diagnosis(DD)**

  cryptoglandular fistula,

  Crohn's disease,

  tuberculosis,

  pilonidal sinus,

  actinomycosis,

  granuloma inguinale and

  lymphogranuloma venereum

- **Management**

Weight reduction measures

Antiseptic containing soaps

Antibiotics

Incision and drainage

Excision and skin graft for raw area

Factors Influencing Fistula Formation

- Age< 40 increases the chance of fistula formation
- Diabetes / Immuno compromised state reduce the chance of fistula formation
- Abscess Type whether deep seated or superficial one
- Organism- Fecal organisms increases the chance of fistula compared to skin organisms
- Postoperative Antibiotic use – increases the chance for fistula formation
- Sitz Bath Solution- Antiseptic solution mixed sitz bath increases the chance for fistula formation compared to plain tap water

ANAL FISSURE

An anal fissure is a split in the anoderm over the hypertrophied band of internal sphincter at the anal verge. The fissure is almost always located close to the midline of the anal canal; in men, 95% are near the posterior midline and 5% near the anterior midline, whereas in women, about 80% will be located posteriorly and 20% anteriorly. The precise cause of an anal fissure has yet to be determined. However, fissures probably are related to tearing of the anoderm at the time of defecation. The increased anal canal pressure that accompanies an anal fissure is associated with ischemia in the area of the fissure and prevents healing, as spasm recurs with each bowel movement.38 An anal ulcer is the chronic form of an anal fissure with heaped-up edges, sentinel skin tag, and occasionally hypertrophied anal papilla.

Clinical Features and Diagnosis

Most fissures are superficial and heal rapidly with no specific treatment. Occasionally, the fissure may extend deeply through the anoderm to expose the fibers of the internal sphincter. Surprisingly, secondary infection rarely occurs.

Fissures that are aberrantly located may be caused by previous anal operations that result in scarring, stenosis, and loss of anoderm. Individuals with chronic diarrhea may develop anal stenosis associated with a fissure. Crohn’s dis- ease often is complicated by anal fissures, which may be a primary manifestation of

the disease. These fissures usually are associated with the shiny anal skin tags typical of anal Crohn's disease and may lie laterally instead of close to the midline of the anus.

Patients with anal fissures usually complain of anal pain accompanying and following defecation. Bright red bleeding may accompany a bowel movement, although it is usually minimal. A slight discharge also may be present.

An anal fissure is detected by gently separating the but- tocks to reveal the lower edge of the fissure at the anal verge, where a sentinel tag also may be seen. A soft touch of a cotton swab to this area will elicit the pain and help with the diag- nosis. A deep gluteal cleft or tight spasm of the sphincter may sometimes obscure the fissure, and, if the patient can tolerate, examination with a small anoscope may be required.

Anal sphincter hypertonicity and an increase in ultraslow waves on anal manometry characterize typical anal fissures.

Treatment

Dietary recommendations and prescription of bulking agents to promote soft stools are beneficial, and warm tub soaks may provide comfort. The majority of acute fissures will heal with conservative management. The use of 2% nifedipine oint- ment applied to the anoderm outside the anal verge relaxes the

sphincter and dilates local vessels to promote healing. Most of the remainder of acute fissures will heal with this added therapy.39

The injection of 20–25 units of botulinum A toxin into both edges of an anal ulcer and directly into the internal sphincter muscle at the ulcer base (total of 75–1000 units) is a simple procedure that has had some mixed success in healing anal fissures.40 It can be done with local anesthesia as an outpatient procedure, with delay of symptomatic relief by approximately 1 week. The paralysis of the internal sphincter reverses in several months, but the fissure may recur. Repeat treatments can be performed if the initial response was ade- quate, but it is expensive with at best modest healing rates.

Surgical treatment may be required for deep, chronic fissures associated with a sentinel skin tag, hypertrophied anal papilla, and exposed internal sphincter. Excellent results can be achieved if the internal sphincter is divided laterally rather than in the midline. Furthermore, lateral sphincterotomy is not associated with keyhole deformity. Only the thickened band of the internal sphincter is divided (ie, partial sphincter- otomy), which limits the amount of internal sphincter tran- section and reduces the potential for fecal incontinence.

Sphincterotomy can be performed under local anesthesia, using either an open or closed technique . The open technique consists of radial incision of the anoderm over the intersphincteric groove and limited division of the internal sphincter only up to the proximal extent of the fissure under direct vision. The

closed method entails dividing the internal sphincter by a subcutaneous approach. Both techniques may be used in the outpatient setting and afford rapid pain relief. Approximately 98% of fissures heal following sphincterotomy. However, there is a small incidence of fecal incontinence fol- lowing the procedure, so careful patient selection is mandatory. Elderly patients with decreased anorectal sensation are gener- ally not ideal candidates for internal sphincterotomy because of this risk. Consideration should be given to a diamond skin advancement flap to cover the ulcer bed in women. This flap requires isolation of a postage stamp–sized island of skin based on a subcutaneous fat pedicle from the inner aspect of the but- tock posteriorly or the perineum anteriorly. The ulcer is excised leaving a defect in the size of the flap. The flap is advanced to the open area in the anoderm and secured to the freshly cut mucosal edges

HEMORRHOIDS

Current theories about the development of hemorrhoids consider the nature of anal “cushions.” Such cushions are aggregations of blood vessels (arterioles, venules, and arteriolar-venular communications), smooth muscle, and elastic connective tissue in the submucosa that normally reside in the left lateral, right posterolateral, and right antero- lateral anal canal.36 Smaller discrete secondary cushions may reside between the main cushions. Hemorrhoids are likely the result of a sliding downward of these anal cushions. Hemor- rhoids provide

tissue to close the anal canal during rest. It appears that the disintegration of the anchoring and support- ing connective tissue and the terminal fibers of the longitudi- nal muscle above the hemorrhoids allows these structures to slide distally.

Classification

Anal skin tags are discrete folds of skin located at the anal verge. These may be the end result of resolved thrombosed external hemorrhoids or, more rarely, may be associated with inflammatory bowel disease. Internal hemorrhoids reside above the dentate line and are covered by transitional and columnar epithelium. First-degree internal hemorrhoids cause painless bleeding with defecation. Second- degree hemorrhoids protrude through the anal canal at the time of defecation but spontaneously reduce. Third-degree internal hemorrhoids protrude and bleed with defecation, but they must be manually reduced. Fourth-degree internalhemorrhoids are permanently fixed below the dentate line and cannot be manually reduced.

External hemorrhoids consist of the dilated vascular plexus located below the dentate line and are covered by squamous epithelium. Mixed hemorrhoids are composed of elements of both internal and external hemorrhoids.

Evaluation of Internal Hemorrhoids

Even though internal hemorrhoids are the most common source of rectal bleeding, it is imperative that other causes be excluded. Because internal hemorrhoids cannot be detected by digital examination, diagnosis can only be made by anos- copy. It is mandatory that colonoscopy be performed in high-risk patients to exclude other sources of bleeding, such as carcinoma or proctitis (eg, for patients aged >40 years and those with a personal or family history of colorectal neopla- sia or a change in bowel habits).

Treatment

Regulation of diet and avoidance of prolonged straining at the time of defecation comprise the initial treatment of mild symptoms of bleeding and protrusion. Increasing the fiber content of the diet to at least 25–35 g daily with raw vegetables, fruits, whole-grain cereals, and hydrophilic bulk- forming agents can reduce and often alleviate all symptoms. If bleeding and protrusion persist, however, the hemorrhoids should be treated surgically.

Elastic ligation of the friable redundant hemorrhoidal tis- sue is quite satisfactory for first-, second- and third-degree hemorrhoids. The procedure is quite simple. The hemorrhoid is visualized with the aid of an anoscope and grasped with forceps. The redundant tissue is pulled into a double-sleeved

cylinder on which there are two latex bands. The bands are discharged from the cylinder, and the hemorrhoidal bundle is ligated.

Certain precautions, however, must be taken with this form of treatment. The ligatures must be placed at least 1–2 cm above the dentate line to avoid extreme discom- fort. Ideally, the ligatures should be placed at the top of the hemorrhoidal cushion. About 25% of patients experience mild, dull anorectal discomfort lasting for 2–3 days fol- lowing the procedure. Mild analgesics and warm baths are usually sufficient to relieve the discomfort. In about 1% of patients, brisk bleeding that may require suture liga- tion occurs when the necrotic tissue sloughs off at 7–10 days. About 2% of patients treated with ligation of the internal hemorrhoid develop thrombosis of an external hemorrhoid, which may cause considerable discomfort. Necrotizing pelvic or perineal sepsis is rare and almost always associated with immune compromise but must be immediately recognized in the setting of increased pain, fever, or urinary dysfunction. Treatment requires immediate examination under anesthesia for debridement of all necrotic tissue, intravenous antibiotics, and observationin the intensive care unit. Patients with poorly functioning neutrophils or reduced numbers of white blood cells for any reason should be treated with another method or at least warned of and observed for the occurrence of this potentially life-threatening complication.

Hemorrhoidal ligation is an office procedure, and no special preparation is required. Patients with a bleeding diathesis or with portal hypertension are not good candidates for ligation. Usually only one hemorrhoid is ligated on the first treatment visit. Ligations can be performed every 2–4 weeks until all symptoms of bleeding or prolapse are alleviated. The second ligation can be multiple if the first treatment is well tolerated. Other minimally invasive procedures such as infrared coagulation, diathermy coagulation, and ultrasound- guided vascular pedicle ligation achieve the same result with variable success and need for effort.

Although diet, bowel regulation, or elastic ligation will alleviate most symptoms of internal hemorrhoids, occasionally further surgical treatment may be needed. Excisional hemorrhoidectomy is indicated for large, mixed (combined internal/external) hem- orrhoids that are not amenable to ligation because the ligature would have to incorporate pain-sensitive tissue at or below the dentate line. Circular stapled hemorrhoidectomy is a newer technique indicated for the elective treatment of circumferential third- and fourth-degree hemorrhoids that are not permanently prolapsed due to scar. This involves placing a purse-string suture incorporating the mucosa of the anal canal with a stapled circumferential mucosectomy at a level 4–5 cm above the dentate line. This can be performed under regional anesthesia with minimal morbidity in experienced hands. Potential complications include bleeding if the staple line is incomplete, pain if

the staple line is too close to the dentate line, rectovaginal fistula if the purse string captures the recto- vaginal septum, complete closure of the rectum if the stapler and purse string are malpositioned, and return of symptoms if the purse string is incomplete.

Occasionally, the internal hemorrhoidal tissue may be incarcerated outside the anal canal, resulting in spasm of the anal sphincter, massive local edema, and severe pain. In such circumstances, the edematous tissue may be injected with a local anesthetic containing epinephrine. Dissipation of the edema by manual compression then can be achieved, allow- ing reduction in the prolapsed tissue. Observation and use of stool softeners with tub soaks usually allow the acute episode to resolve without an operation because the hemorrhoidalvessels have been naturally thrombosed. The thrombosed internal hemorrhoids will sclerose and may not require surgery. If symptoms persist or recur, a three-quadrant hem- orrhoidectomy may then be necessary. If necrotic tissue is present at the time of acute thrombosis, emergent excisional hemorrhoidectomy is necessary. Care should be taken to preserve the anoderm. The patient should be kept in the hos- pital after the procedure until the pain is minimal and until spontaneous voiding is possible and to ensure resolution of any potential infection.

MIXED HEMORRHOIDS

The mucosal component of mixed hemorrhoids occasionally can be treated by elastic ligation. Large symptomatic, nonreducing mixed hemorrhoids generally

are treated by excisional hemorrhoidectomy. The patient is placed in the prone flexed position under local anesthesia using a perianal field block with 0.25% bupivacaine with or without epinephrine. The apex of the vascular pedicle is ligated first with a 3-0 chromic catgut suture. An elliptical excision incorporates the external andinternal hemorrhoids from the perianal skin to the anorectal ring. The hemorrhoidal tissue is sharply dissected from the underlying internal sphincter. The entire wound is then closed by running the apex chromic catgut suture to the distal perianal skin edge. The largest hemorrhoid is excised first, with care taken not to excise excessive tissue that may result in a stricture. If there is any concern of leaving an adequate anal aperture covered by normal anoderm, it is best to modify a planned three-quadrant hemorrhoidectomy and instead perform a two-quadrant hemorrhoidectomy and band the remaining internal component.

THROMBOSED EXTERNAL HEMORRHOIDS

The external venous plexus is located at the anal verge and encircles the anal canal. A segmental thrombus is confined to the anoderm and perianal skin and does not extend above the dentate line. The problem presents as a painful perianal mass. The overlying skin may be stretched to 2 cm or more. Pain usually peaks within 48 hours and generally becomes minimal after the fourth day. If untreated, the thrombus is absorbedwithin a few weeks. The pressure of the underlying clot will occasionally cause the adjacent skin to become necrotic,

and the clot will be extruded through the area of necrosis. This is noted by the patient as rectal bleeding followed by relief of the anal pain. A partially extruded clot can be removed in the office to provide relief.

Treatment of thrombosed hemorrhoids is aimed at relief of the pain. If symptoms are minimal, mild analgesics, sitz baths, proper anal hygiene, and bulk-producing agents will suffice. However, if pain is severe, excision of the throm- bosed hemorrhoid may be beneficial. Because numerous vessels usually are involved, it is necessary to excise the entire mass along with the overlying skin and subcutaneous tissue. The wound is left open without packing. Postopera- tive care consists of mild analgesics and warm sitz baths or showers.

FECAL INCONTINENCE

Pathophysiology

Mechanical disruption is usually due to obstetric injury, trauma, or fistula disease in which the external muscle is divided or damaged (Table 39-1). Neurogenic incontinence is due to stretching of the pudendal nerves during prolonged labor, descent of the perineum and nerve stretch during strain- ing at stool or rectal prolapse, or systemic disease such as mul- tiple sclerosis, scleroderma, or spinal cord injury. Idiopathic incontinence is due to medical disease such as diarrhea in a patient with limited rectal capacity, irritable bowel

syn- drome, or sedatives that cause poor sensation in the anal canal in patients with no evidence of neurogenic or mechanical incontinence.

The normal continence mechanism has several compo- nents. Rectal capacitance and compliance are essential. The rectum normally holds between 200 and 250 mL. It distends readily with filling and has limited muscular activity intrinsically. The internal anal sphincter provides 80% of the resting anal sphincter pressure that provides the resistance to gas and mucus at the anal canal. The sampling reflex is a function of rectal distension causing internal anal sphincter relaxation via an intramural reflex to the internal sphincter. The rectal con- tents can then be sensed in the sensory nerve–rich transitional zone and anoderm to discriminate the true nature of the rectal contents. This sampling reflex occurs frequently throughout the day to provide continence and also serves to initiate the defecation process. The voluntary external sphincter muscle contraction in response to this sampling reflex provides the final active component of fecal continence. The subconscious voluntary contraction of the external sphincter, puborectalis, and pelvic floor muscles provide complete control of rectal contents. The pelvic floor muscles maintain continual activ- ity, even during sleep, to provide fecal continence. This alsoseems to be a learned response because infants and children require 1–2 years to achieve control.

Fecal incontinence is defined as the inability to control the passage of gas, liquid, or stool until a socially acceptable time or place for evacuation. The

frequency of incontinence may vary, and the loss of control may involve solid stool, liq- uid stool, or gas only. Frequent episodes of incontinence to gas alone may be as incapacitating as infrequent episodes of solid stool. Evaluation of fecal incontinence should include assessment of severity as well as impact of disease. The Amer- ican Society of Colon and Rectal Surgeons has validated a fecal incontinence severity index and a fecal incontinence quality-of-life index to help standardize the assessment of fecal incontinence.1–3

Diagnosis and Evaluation

A problem-focused history as well as physical examination should be performed. History should include information on gastrointestinal or neurologic disorders, obstetrics, and previous anorectal surgery. On physical examination, a thin perineal body with scarring between the vagina and the anal canal and a poor squeeze on command may indicate a sphinc- ter problem. In the setting of an anterior sphincter injury, it is essential to evaluate for the presence of a rectovaginal fistula.

Anal manometry is useful to document reduced resting and squeeze pressures as well as sphincter length in individ- ual sphincter quadrants. Normal resting pressure is at least 40 mm Hg. Normal squeeze pressure is 80 mm Hg, which is usually double the resting pressure. Sphincter length is greater than 3 cm. Normal sensation should allow detection of a balloon inflated with 10–20 mL of

air in the distal rec- tum. Maximal tolerable volume is at least 100 mL of air-filled balloon distention.

ELECTROMYOGRAPHY

Pudendal nerve terminal motor latency (PNTML) deter- mination measures the conduction velocity of the nerve action potential through the terminal 4 cm of the puden- dal nerve between Alcock's canal and the external sphincter (Fig. 39-4). A delay in conduction reflects injury to the fast- conducting fibers of the nerve. This injury usually is the result of stretch, direct trauma, or systemic disease. The normal terminal motor latency is 2.0 ± 0.2 milliseconds. A delay in conduction velocity greater than this indicates nerve injury. Measurement of the PNTML has been shown to be clinically less useful than originally thought. The defect in the nerve must be fairly advanced to see a change in conduction and is therefore somewhat inaccurate for assessing minor defects. Single-fiber or concentric needle electromyography (EMG) is most accurate but not very useful clinically due to pain during the test.

TRANSRECTAL ULTRASOUND

The most sensitive method for documenting sphincter injury may be the anal ultrasound using a 360-degree rotating 10-MHz transducer covered with an anal cap and inserted into the anal canal. The focal length of the anal probe is approxi- mately 1–2 cm and allows evaluation of the anal sphincter muscles in

three dimensions as the probe is withdrawn from the rectum (Fig. 39-5). The ultrasound can detect scarring at the site of an injury, as well as rectovaginal fistula. The pres- ence of a sphincter defect alone, however, may not correlate with fecal incontinence. Figure 39-6 shows an algorithm for the evaluation and management of fecal incontinence using these diagnostic techniques.

High-resolution magnetic resonance imaging (MRI) with an endoanal coil is a diagnostic modality that can detect sphincter defects similarly to endoanal ultrasound. Endoanal coil MRI may also show sphincter atrophy or thinning not detectable by endoanal ultrasound that may be useful for pre- dicting success of surgical repair.4 Focused pelvic floor MRI with a surface coil and dynamic MRI are being evaluated as methods of evaluating fecal incontinence. Treatment

Therapy depends on severity of symptoms. For milder forms of fecal incontinence, an improvement in symp- toms may occur with dietary changes such as increasedfiber intake or antidiarrheal agents. A bowel regimen with high fiber, suppositories, and enemas every morning may be appropriate in patients with incontinence that cannot be repaired because of comorbidities or other confounding factors.

MUSCLE SENSORY RETRAINING OR BIOFEEDBACK

Operant conditioning using surface EMG, manometric, and balloon sensation techniques may be helpful in patients who do not respond to dietary changes.

Biofeedback may improve symptoms in patients with a mechanical sphincter defect before repair or who have persistent or recurrent symptoms after sphincter repair. Improvement in symptoms is reported in 64–89% of patients.8 Prediction of the sub- set of patients who may benefit from biofeedback is difficult, but in general those with poor pudendal nerve function or complete disruption of the anal sphincter have less benefit. A trained physical therapist or anal physiotherapist experienced with anal and pelvic floor treatment is critical to the degree of success achieved.

ANAL SPHINCTER RECONSTRUCTION

Anal sphincter repair can be performed successfully in most patients who have an isolated mechanical sphincter defect. A complete bowel preparation is highly recommended. The ends of the obstetrically injured sphincter are identified in the anterior perineum and either overlapped and sutured “pants over vest” or reefed in the midline to reconstruct the circular muscle. Control of solid and liquid stool will be adequate in 90% of patients after this type of repair. How- ever, complete continence is usually only achieved in 75% of patients and the long-term results may even be less satisfactory.9 Leakage of liquid, mucus, and gas may continue to affect patients after repair. Improvement in squeeze pressures has been shown to correlate best with functional outcome.10 The presence of at least one normal pudendal nerve is important for functional improvement after sphincter reconstruction. Complications of wound infection,

fistula formation, and breakdown of the sphincter repair may be reduced by leaving a drain in the perineal body after the repair. A repeat procedure is equally successful in patients in whom the sphincter repair is noted to be disrupted by endoanal ultrasound.

OTHER TREATMENTS AND NEW MODALITIES

Sacral nerve stimulation using implanted electrodes at the S2–4 foramen has been found to be of benefit for patients with fecal incontinence. Complications requiring removal of the device seem to be uncommon. Rarely, infection and pain at the site can be encountered. This technique is now approvedin the United States for fecal incontinence. The mechanism of action is not fully delineated but may be due to the lift of the pelvic floor provided by levator ani continual contraction. Placement of the electrodes can be performed as an outpatient under local anesthesia.

For patients with a severely damaged sphincter, dynamic graciloplasty or implantation of a neurostimulator that provides constant activity into a muscle transferred to the anal canal may be appropriate, but it has been discontinued in the United States. Alternatively, an artificial sphincter of silicone with water-filled circum-anal cuff, called artificial bowel sphincter, may be implanted. Although the rate of explantation secondary to infection remains high, this technique can provide improvement in fecal continence. This technique has been removed from the market.

When all other treatments fail, or if a patient desires, a stoma may be appropriate. Attention should be directed preoperatively to correct siting of the stoma to prevent pouching difficulties. Quality-of-life measures show that patients are generally satisfied. In a series from St. Mark's hospital, 83% of patients with a permanent colostomy reported improvement in lifestyle.

PELVIC FLOOR OUTLET OBSTRUCTION AND SOLITARY RECTAL ULCER SYNDROME

Pathophysiology

The presenting complaints of patients with pelvic floor outlet obstruction usually include some form of constipation and straining. Defecation is a learned process and pelvic floor outlet obstruction may be either a change in the defecating mechanism or a failure to learn the appropriate series of eventsto allow normal function. The muscle of the pelvic floor is completely normal, but the function and control are abnormal. There may be a psychologic influence in this syndrome because patients who have been sexually abused or have been psychologically traumatized may develop this outlet obstruction. The need to dominate and control has also been documented in these patients. The syndrome results from obstruction of the anal canal due to anterior displacement of the puborectalis muscle and contraction of the pelvic floor and external sphincter during straining to defecate. Attempts to defecate against a closed pelvic floor result in chronic funnel formation of the rectum and descent of the anterior

rectal wall into the anal canal. This chronic trauma and ischemia may lead to the formation of an ulcer on the anterior wall of the rectum. The stimulus to defecate is often neglected. The end result is an uncoordinated effort at defecation with pelvic floor obstruction of the outlet, even as the rectum begins to distend and the autonomic muscles begin to relax.

It is possible that pelvic floor outlet obstruction is etiologically related to rectal prolapse and intussusception. However, no long-term studies have provided conclusive evidence. Patients may also present with megarectum from outlet obstruction, fecal incontinence due to nerve injury from chronic straining, or severe mucosal prolapse or hemorrhoids.

The solitary rectal ulcer is assumed to be due to ischemia of an isolated portion of the anterior rectal wall, approximately 10 cm above the anal verge, which prolapses partially into the anal canal and becomes ischemic during prolonged straining. The healing process may occasionally incorporate mucosal glands beneath the new mucosal surface and form a localized area of colitis cystica profunda. These entrapped glands continue to produce mucus and are occasionally mistaken for an early neoplasm of the rectum.

Diagnosis and Evaluation

Patients with pelvic floor outlet obstruction may complain of a number of problems that include constipation and straining at defecation, the need for

digital maneuvers to evacuate the rectum, bleeding, mucosal prolapse, and hemorrhoids. They occasionally present with chronic pain of the anal canal and symptoms of severe spasm of the anal canal and pelvic floor. In the past this was classified as anismus, proctalgia fugax, or levator ani syndrome. Digital rectal examination may reveal paradoxical motion (tightening instead of relaxing) of the puborectalis muscle during attempts to push the finger out of the rectum. Defecography generally shows a persistent puborectalis impression on the posterior rectum as the patient attempts to evacuate the rectal contents. Defecography tends to overdiagnose the problem of nonrelaxing puborectalis. This may be due to an unnatural setting in a cold radiology suite or possible patient embarrassment. The presence of nonrelax- ing puborectalis muscle must therefore be confirmed using some other technique. The method best suited to our prac- tice has been to have the patient expel a 60-mL air-filled soft latex balloon while sitting in a private bathroom. This simpletechnique of expulsion of the balloon within the confines of a private bathroom seems to be adequate. Surface EMG is also useful in the diagnosis and treatment of nonrelaxing puborectalis muscle, as it documents decreased pelvic floor electrical activity during proper straining techniques and an increase during paradoxical contraction. Colonic transit study will demonstrate accumulation of all of the administered radi- opaque markers within the rectum after an elapsed period adequate for clearance (>7 days). An algorithm used to deal with pelvic floor disorders is showed.

Treatment and Management

The initial steps in the treatment of outlet obstruction problems include high doses of fiber and establishment of a normal bowel routine. Outpatient biofeedback using surface EMG, balloon expulsion, sensation techniques, and a simulated stool are also effective in severe cases of nonrelaxing puborectalis muscle.30 Psychological counselingand relaxation techniques may be of help in patients who have a psychological component to their problem.

RESEARCH PROPOSAL

TITLE: : PROSPECTIVE STUDY ON DEVELOPMENT OF PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS

1.AIM &OBJECTIVES : TO FIND OUT THE FACTORS INFLUENCING THE FORMATION OF PERANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS PATIENTS IN OUR HOSPITAL

2. DESIGN OF STUDY : PROSPECTIVE STUDY

3. PERIOD OF STUDY : 6 Months

4.COLLABORATING DEPARTMENT: Anesthesia , Microbiology

5. SELECTION OF STUDY SUBJECTS : All patients satisfying inclusion criteria attending OPD or admitted in Govt Rajaji hospital for the period of 6 months

6.DATA COLLECTION :Data regarding history, clinical examination and investigations

7.METHODS : Prospective Study

8.ETHICAL CLEARANCE : Obtained

9.CONSENT : Individual written and Informed consent

10..CONFLICT OF INTEREST : None

11.FINANCIAL SUPPORT : NIL FROM THE INSTITUTION

12.PARTICIPANTS : Patients from Casualty, Surgical OPD and ward for Perianal abscess drainage

INCLUSION CRITERIA

1. Patients who attending OPD or Admitted in wards of GRH for Perianal abscess
2. Patients consented for inclusion in the study according to designated proforma.

EXCLUSION CRITERIA

1. Patients with known Fistula in ano
2. Patients with known Irritable Bowel Disease
3. Patients not consented for inclusion in the study.

METHODOLOGY

In this prospective study Perianal abscess drained patients will be followed in OPD and development of fistula in ano at the end of 3 months noted by clinical examination

MATERIALS AND METHODS:

SOURCE OF DATA:

All patients satisfying inclusion criteria attending OPD or admitted in Govt Rajaji hospital for the period of 9 months with Perianal anal abscess

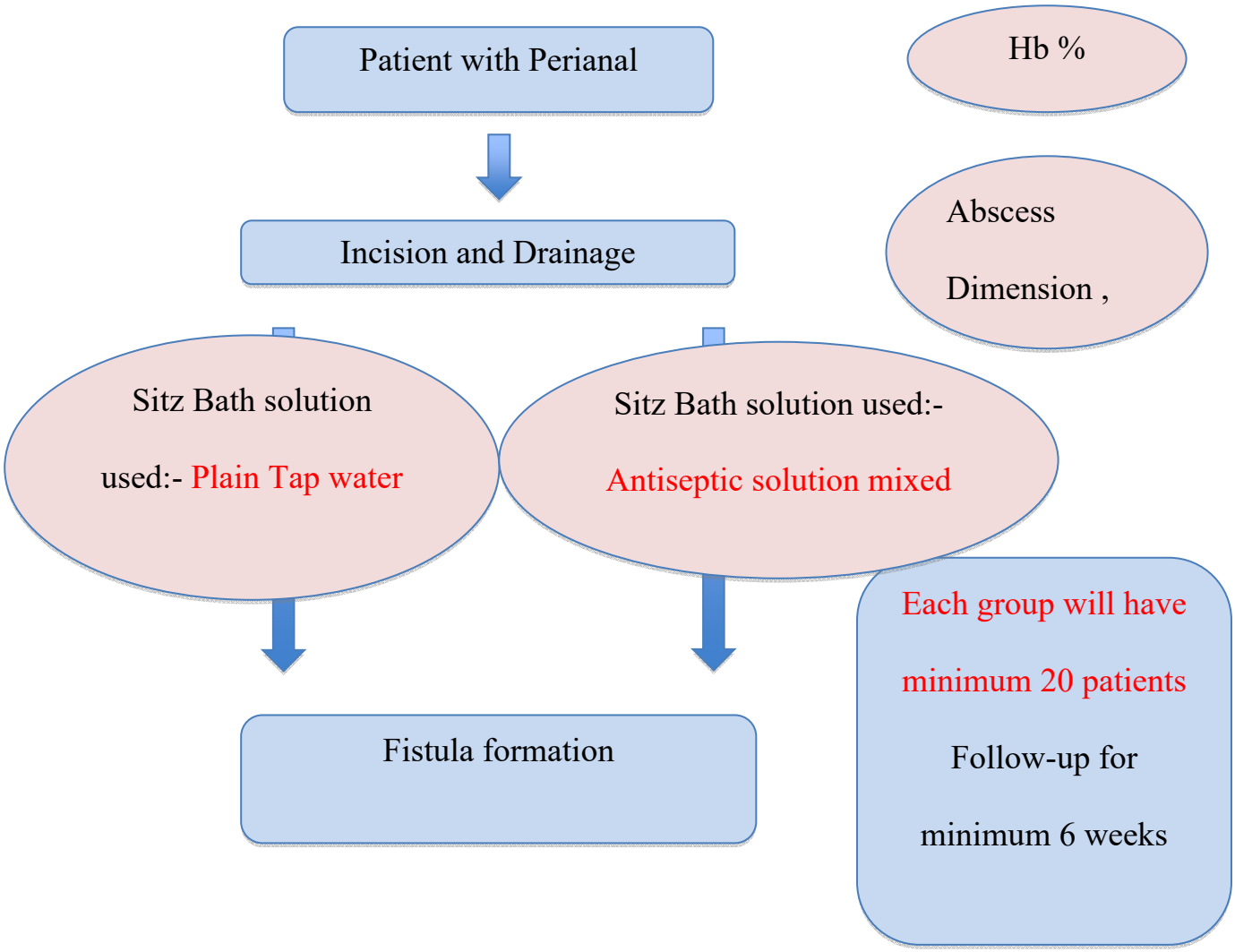
METHOD OF COLLECTION OF DATA:

Details of cases, full history,clinical examination,investigations.

DATA ANALYSIS

Using statistical analysis

PROTOCOL



INCLUSION CRITERIA

1. **Patients who attending OPD or Admitted in wards of GRH for Perianal abscess**
2. **Patients consented for inclusion in the study according to designated proforma.**

EXCLUSION CRITERIA

1. **Patients with known Fistula in ano**
2. **Patients with known Irritable Bowel Disease**
3. **Patients not consented for inclusion in the study.**

DATAFORM

1. Serial Number :-
2. Name:-
3. Age:-
4. Sex:-

a) Male	b) Female	c) Transgender

5. OP / IP Number:-
6. Place of Living:-

a) Rural	b) Urban	c) Semi-urban

7. Educational Status:-
8. Work / Job:-
9. Addictions:-

a) Alcohol	b) Smoking	c) Tobacco	d) Drug Abuse	e) Others (Specify)

10. Co-Morbid Conditions:-

a) DM	b) HT	c) TB	d) BA / COPD	e) Others (Specify)

11. Weight (Kgs):-

12. Height (cms):-

13. Urine Sugar:-

14. Hemoglobin (Hb%) :-

15. Random Blood Sugar (RBS):-

16. History of previous perianal abscess:- 1) Yes 2) No

17. If Yes how many times:-

18. No of days since the perianal pain:-

19. No of days since the Fever:-

20. Abscess Position (Clock position):-

21. Abscess distance from Anal verge:-

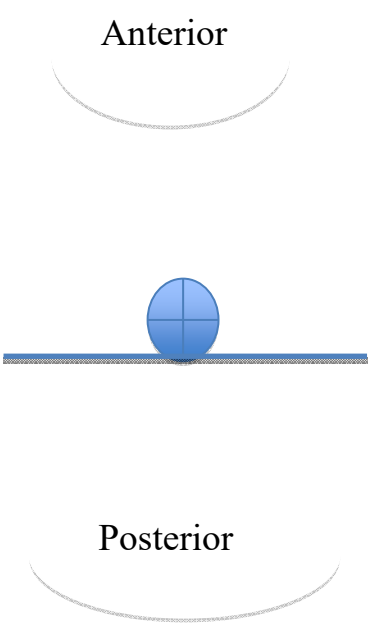
22. Abscess Size approximately(cms):-

23. Abscess Depth After Drainage approximately (cms):-

24. Amount of pus drained approximately (ml):-

25. I & D Dimension approximately (cms):-

26. Consistency of abscess



Indurated	Pus filled	Both

27.I & D Done under which type of Anesthesia:-

28.Wound Sitz bath solution:-

29.Antibiotic Prescribed:-

30.Analgesic Prescribed:-

31.Pus Culture & Sensitivity :- 1) Sent 2) Not sent 3) Data not available

32.C & S Report –(Organism and Sensitivity):-

33.Follow-up wound size(cms):-

7days-	15days-	1st month	2nd month	3rd month

34.Wound Healed in Days:-

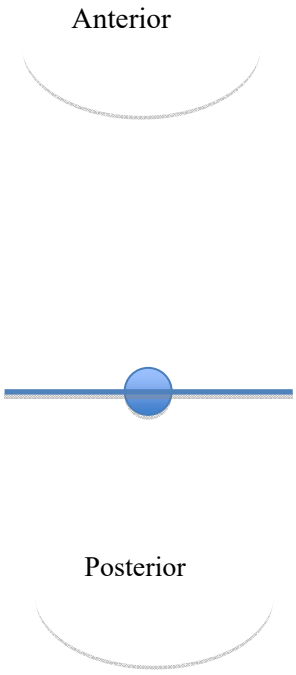
35. Presence of fistula after 3 months -

Present	Absent	Not able to decide

36.If fistula present

1) Single	2) Multiple

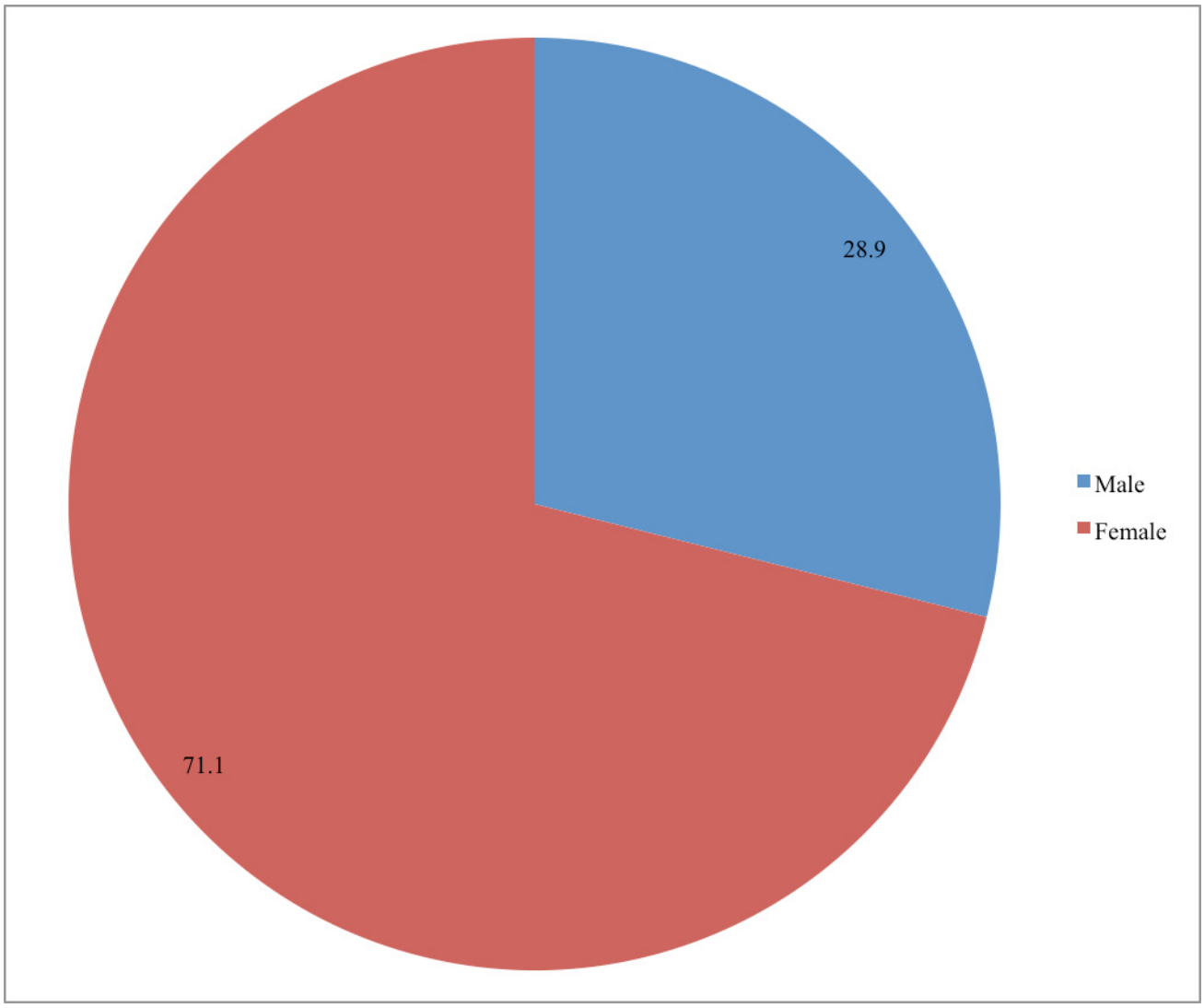
37.Fistula Details:-



38.Remarks – If Any

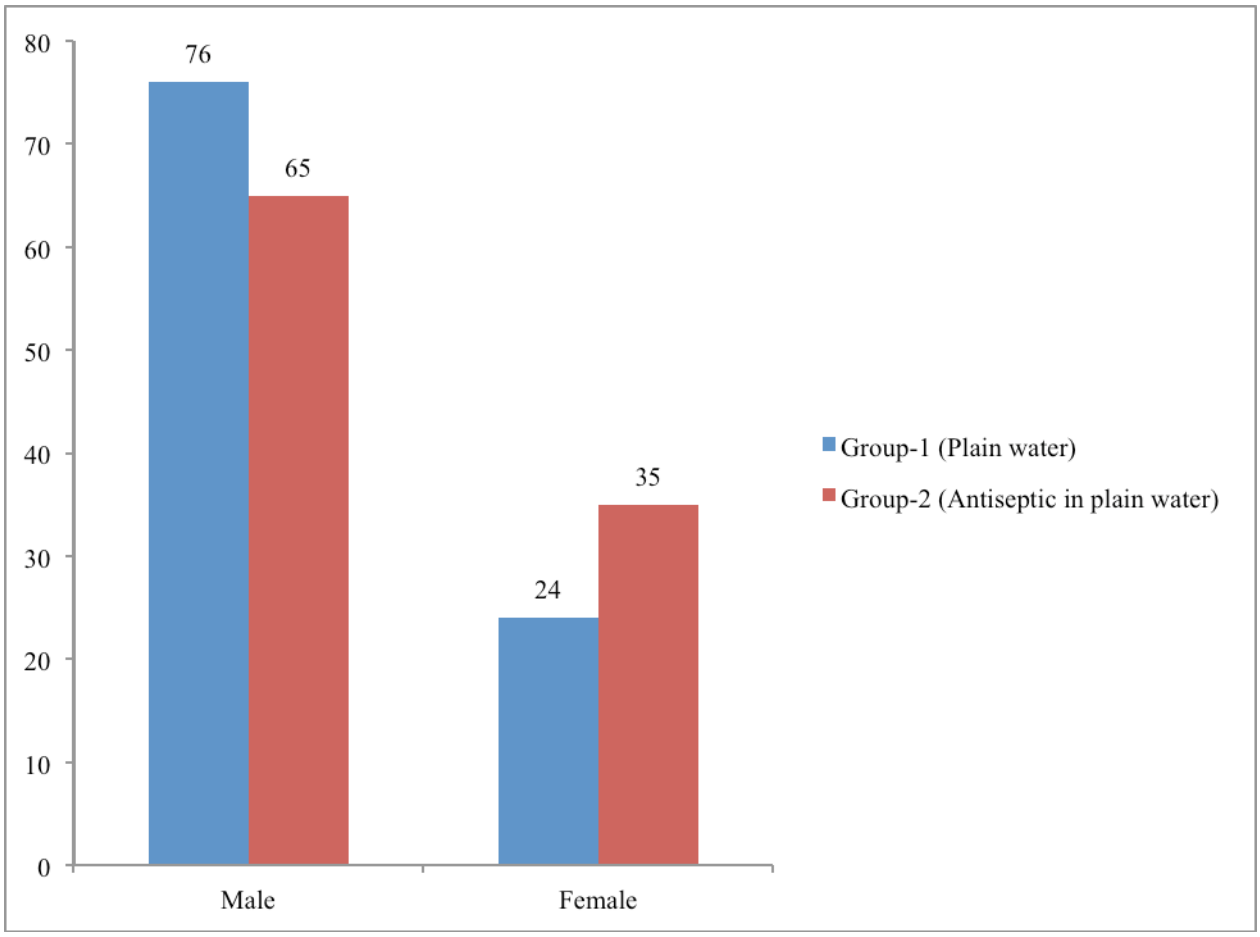
OBSERVATION & RESULTS

Total of 45 patients were included in the study. Among them 13 (28.9%)were females and 32(71.1%) were males. Among the 45 patients25 patients were in group-1(Plain water sitz bath) and the remaing 20 patients in group-2.(Antiseptic solution mixed sitz bath).



Out of 45 clients 14 (31.1%)developed perianal fistula and 31(68.9%) didn't develop fistula after 3 months of followup.

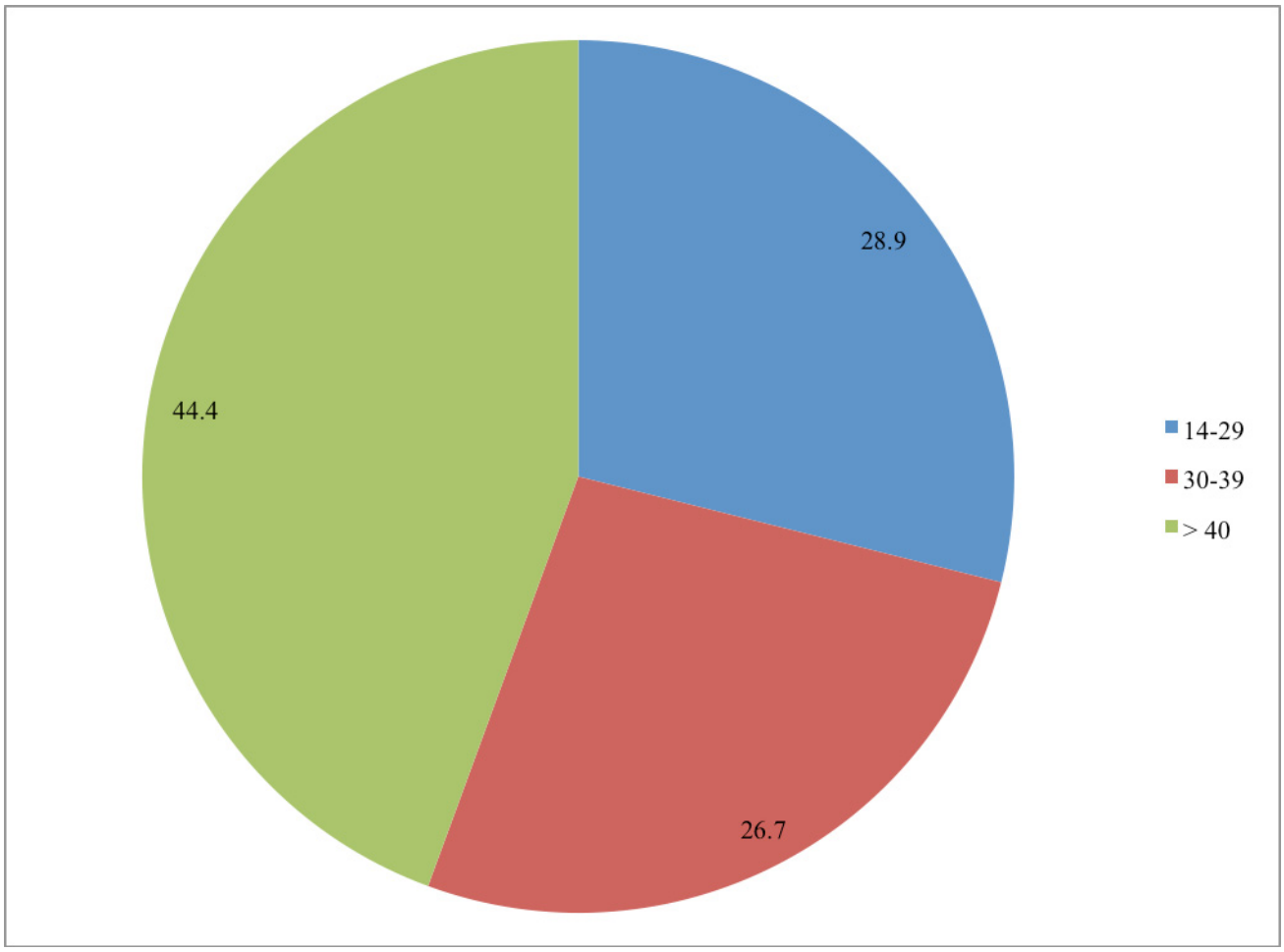
Group-wise sex distribution of study participants.



Out of 25 group-1 patients 19 were males and 6 were females. Out of 20 group-2 patients 13 were males and 7 were females.

Gender		
Male	19 (76)	13 (65)
Female	6 (24)	7 (35)
Total	25 (100)	20 (100)

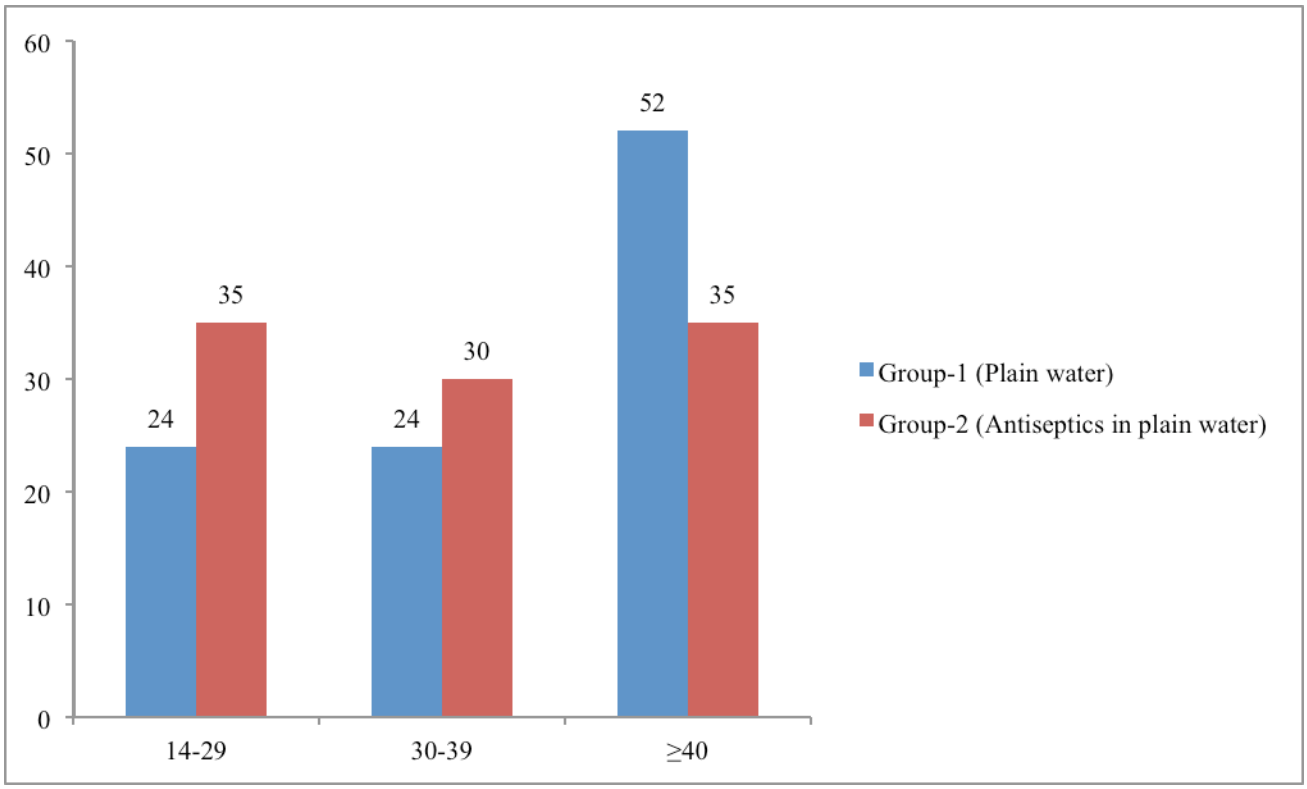
Age distribution of all study participants. (N=45)



Age wise in group-1 patients , 6 were belongs to 14-29 age group, another 6 belongs to 30-39yrs and the remaining 13 belongs to >40 yrs of age group. In group-2 patients, 7 were belongs to 14-29, another 6 belongs to 30-39 and the remaining 7 belongs to >40yrs age group.

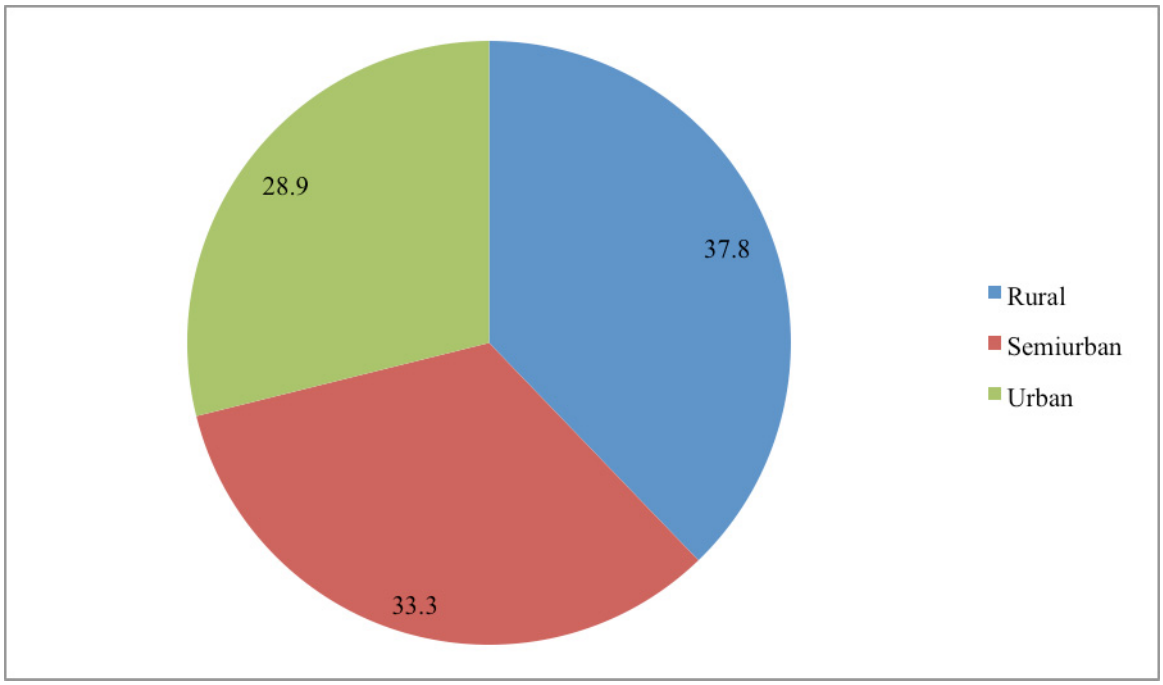
Age category in years		
14- 29	6 (24)	7 (35)
30-39	6 (24)	6 (30)
≥40	13 (52)	7 (35)
Total	25 (100)	20 (100)

Group-wise age distribution of study participants.



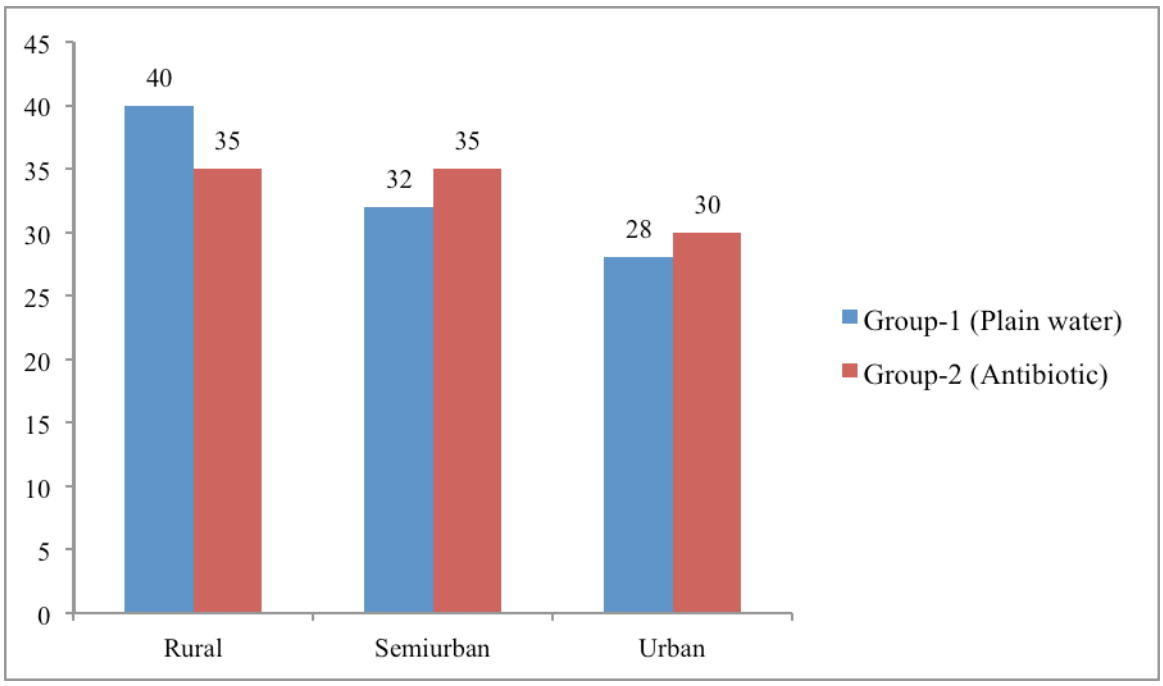
In group-1 age < 40 years is 12 and >40 yrs is 13, in group-2 age <40 is13 and > 40yrs is 7.

Residence distribution of all study participants.



Patients from rura residency is 37.8%, semiurban 33.3% & Urban 28.9%. In group-1 patients 10 from rural, 8 from semi-urban and 7 from Urban areas. In group-2 patients 7 from rural, 7 from semi-urban and another 6 from urban areas.

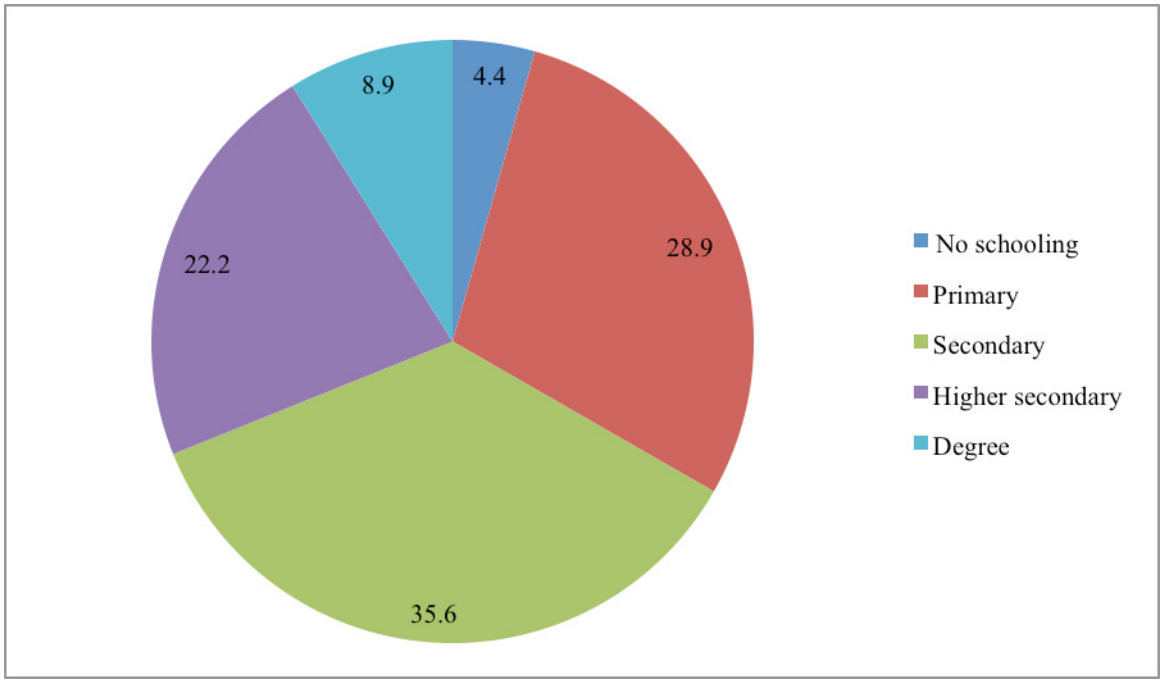
Group-wise place of living distribution of study participants



Among them 10 patients belongs to rural residence and 15 belongs to urban or semiurban residence in group-1. In group-2 , 7 patients belongs to rural residence and the remaining 13 belongs to urban or semiurban residence.

Residence		
Rural	10 (40)	7 (35)
Semi-urban	8 (32)	7 (35)
Urban	7 (28)	6 (30)
Total	25 (100)	20 (100)

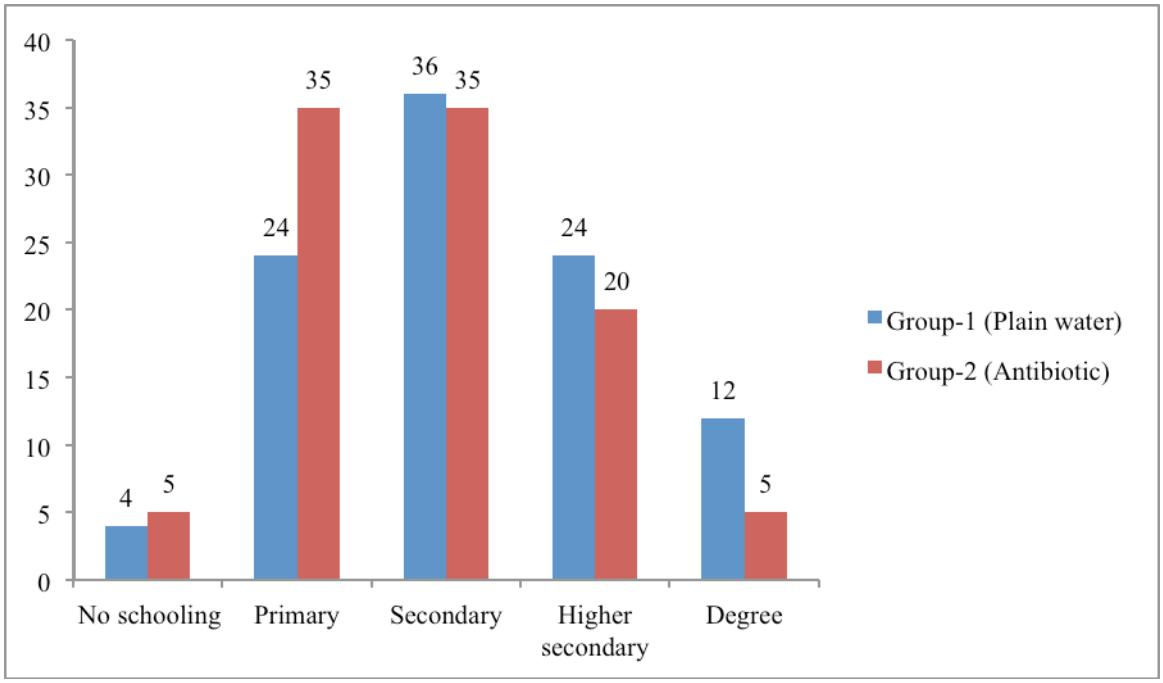
Education status of all study participants.



Among the study population 8.9% were degree holders, 22.2% done higher secondary schooling, 35.6% were secondary schooling, 28.9% were primary schooling and the remaining 8.9% were uneducated.

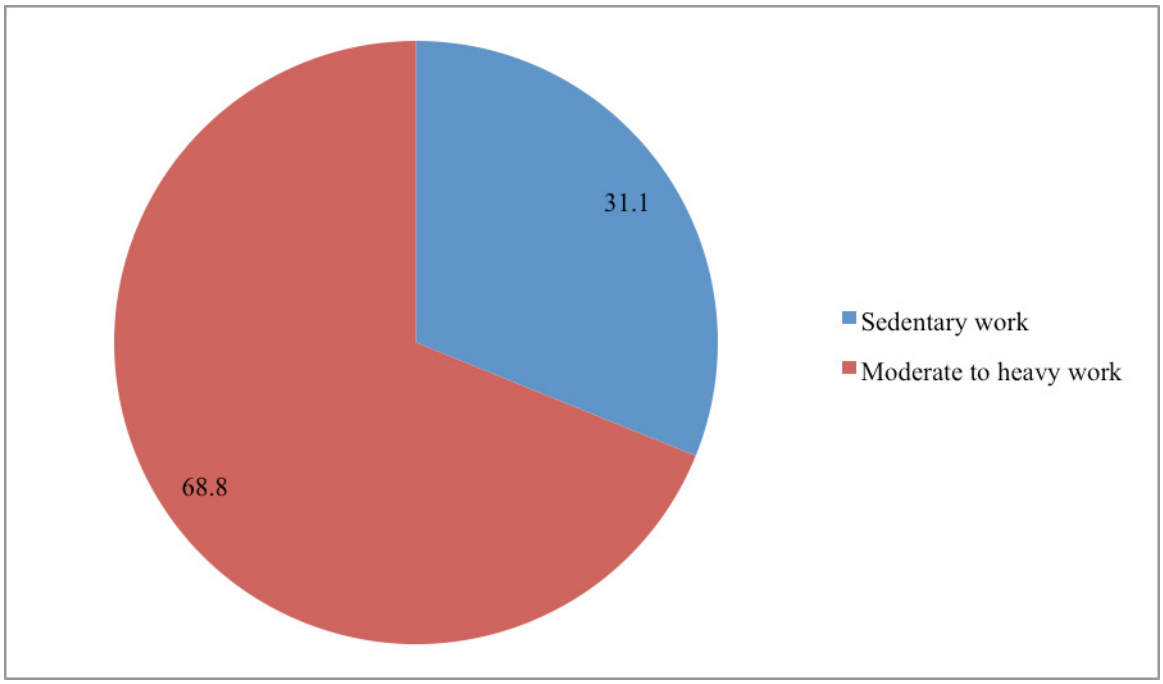
Education		
No Schooling	1 (4)	1 (5)
Primary	6(24)	7 (35)
Secondary	9 (36)	7 (35)
Higher secondary	6 (24)	4 (20)
Degree	3 (12)	1(5)
Total	25 (100)	20 (100)

Group-wise education distribution of study participants.



Among group-1, 1 patient not done school, 6 were primary schooling, 9 were secondary schooling, 6 were higher secondary schooling and 3 were degree holders. Among group-2, 1 was no schooling, 7 were primary, another 7 were secondary, another 4 were higher secondary schooling and 1 was a degree holder.

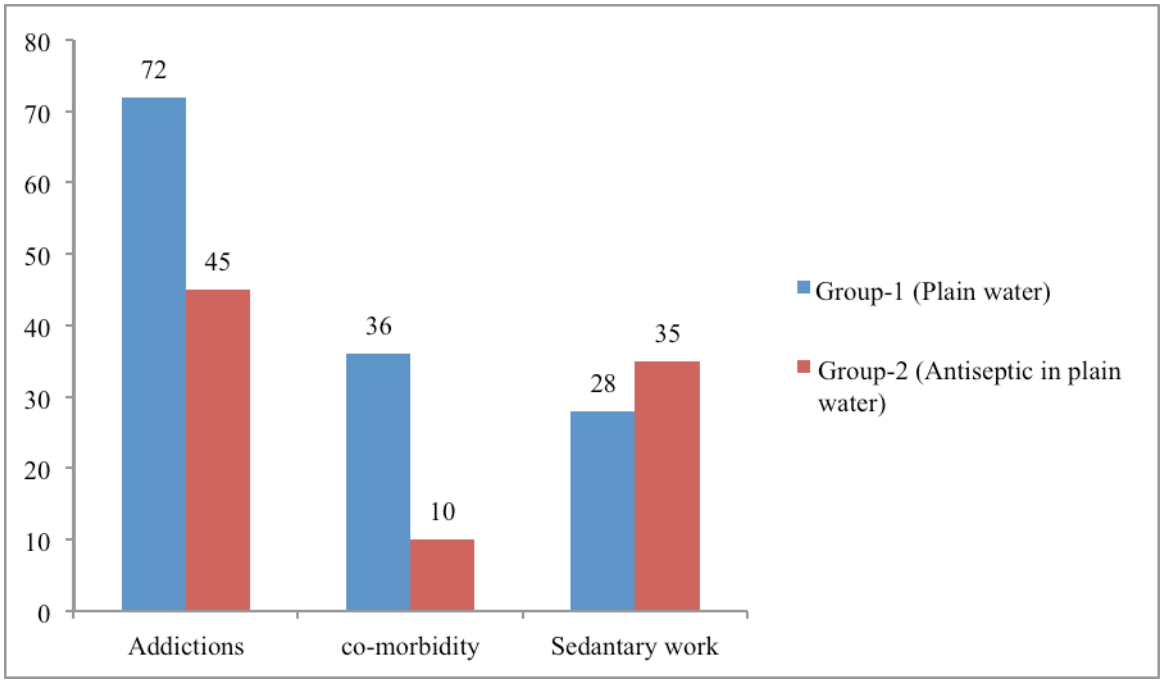
Occupation status of all study participants.



Occupation wise 68.8% of population were moderate to heavy workers and the remaining 31.1% were sedendary work category.

Occupation		
Sedentary	7 (28)	7 (35)
Moderate to heavy	18 (72)	13 (65)
Total	25 (100)	20 (100)

Group-wise distribution of addictions, co-morbidities and sedentary workers



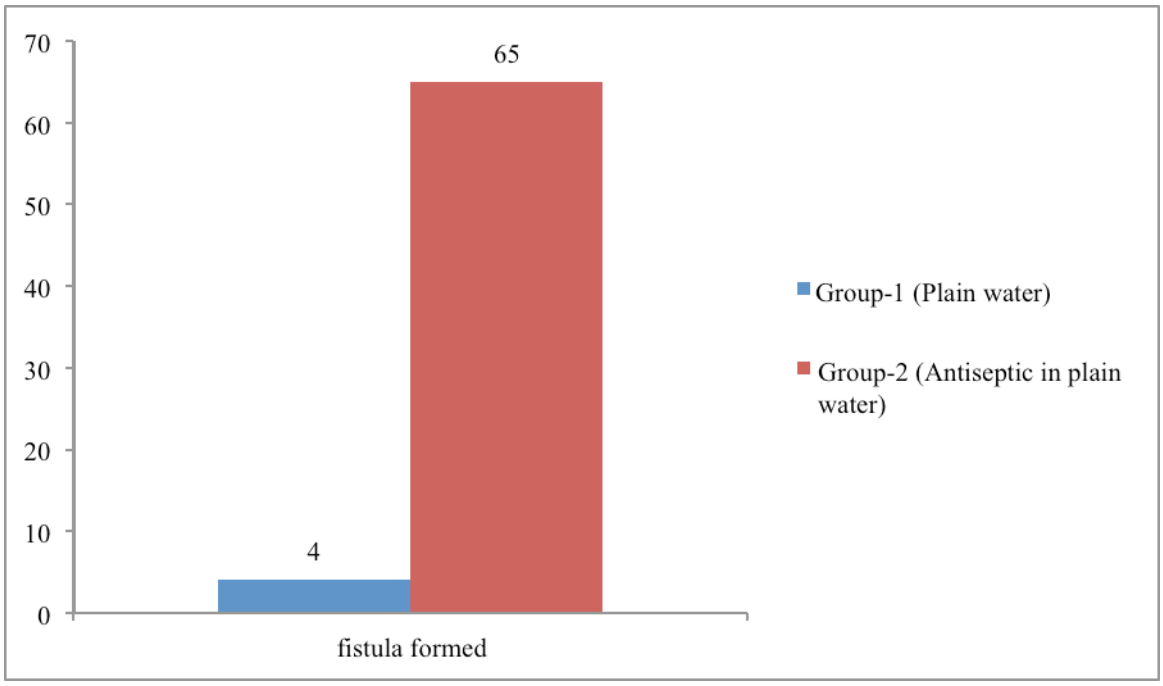
Addiction for tobacco, smoking or alcohol present in 18 participants of group-1 and 9 of group-2 participants. No addictions were found in 7 group-1 and 11 group-2 patients.

Study parameters	Group-1 N (%)	Group-2 N (%)
Addictions		
Yes	18 (72)	9 (45)
No	7 (28)	11 (55)
Total	25 (100)	20 (100)
Co-morbidities		
Yes	9 (36)	2 (10)
No	16 (64)	18 (90)
Total	25 (100)	20 (100)

Co-morbidities like DM, HT or HIV present in 9 group-1 and 2 group-2 patients. No co-morbidities were found in 16 group-1 and 18 group-2 patients.

Among the participants sedantary workers were each 7 in group-1 & 2. Moderate to heavy workers were 18 in group-1 and 13 in group-2.

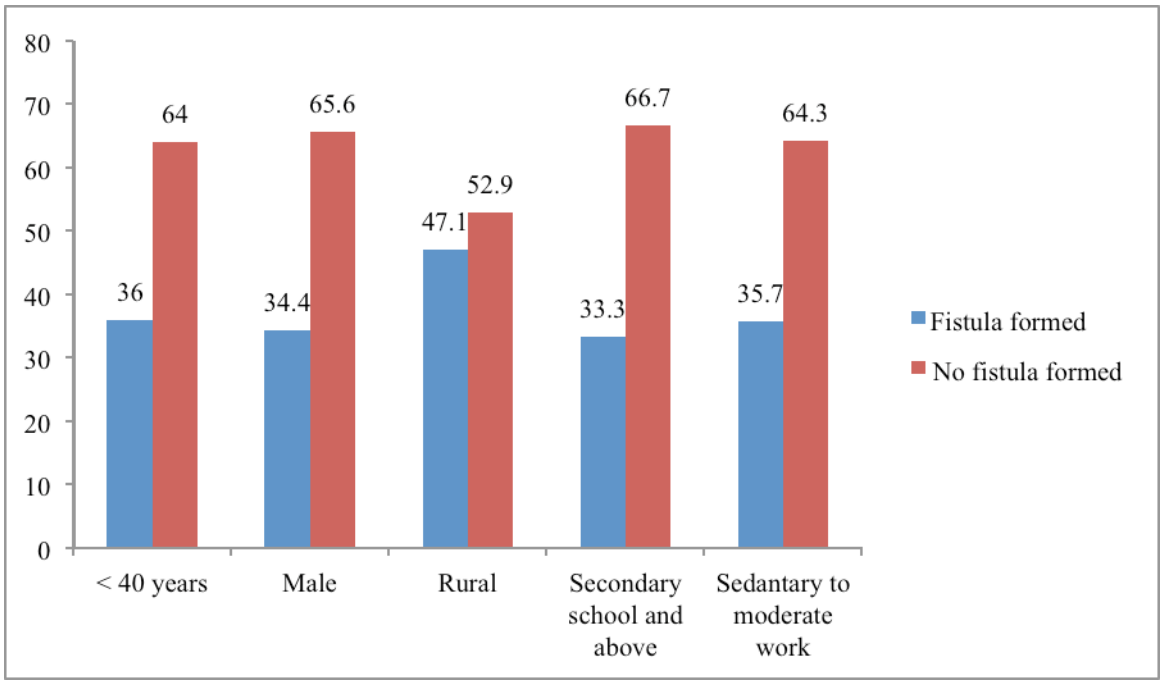
Group-wise fistula formation after treatment of study participants.



Among the group-1 only 4%(1) developed fistula and the remaining 96%(24) didn't. In group-2 65%(13) developed fistula and the remaining 35%(7) didn't.

Follow up result after 3 months	Group-1 N (%)	Group-2 N (%)
Fistula formation		
Yes	1 (4)	13 (65)
No	24 (96)	7 (35)
Total	25 (100)	20 (100)

Socio-demographic features of study participants based on the outcome (fistula formation)



Fistula formation in age group < 40 years is 36%(9) and in >40 years its only 25%(5), but P value is 0.42 , not significant.

Age category in years					
< 40	9 (36)	16 (64)	1.7 (0.4-6.1)	0.62, 1	0.42
≥ 40	5 (25)	15 (75)	1		

Among the males 34.4%(11) developed fistula compared to 23.1%(3) in females with P value of 0.72, which is insignificant.

	Gender					
	Male	11 (34.4)	21 (65.6)	1.7 (0.4-7.6)	0.55, 1	0.72
	Female	3 (23.1)	10 (76.9)	1		

Among the rural population 47.1%(8) developed fistula compared to 621.4%(6) in urban population with P value of 0.07 which is insignificant.

	Residence					
	Rural	8 (47.1)	9 (52.9)	3.3 (0.8-12.1)	3.24, 1	0.07
	Urban	6 (21.4)	22 (78.6)	1		

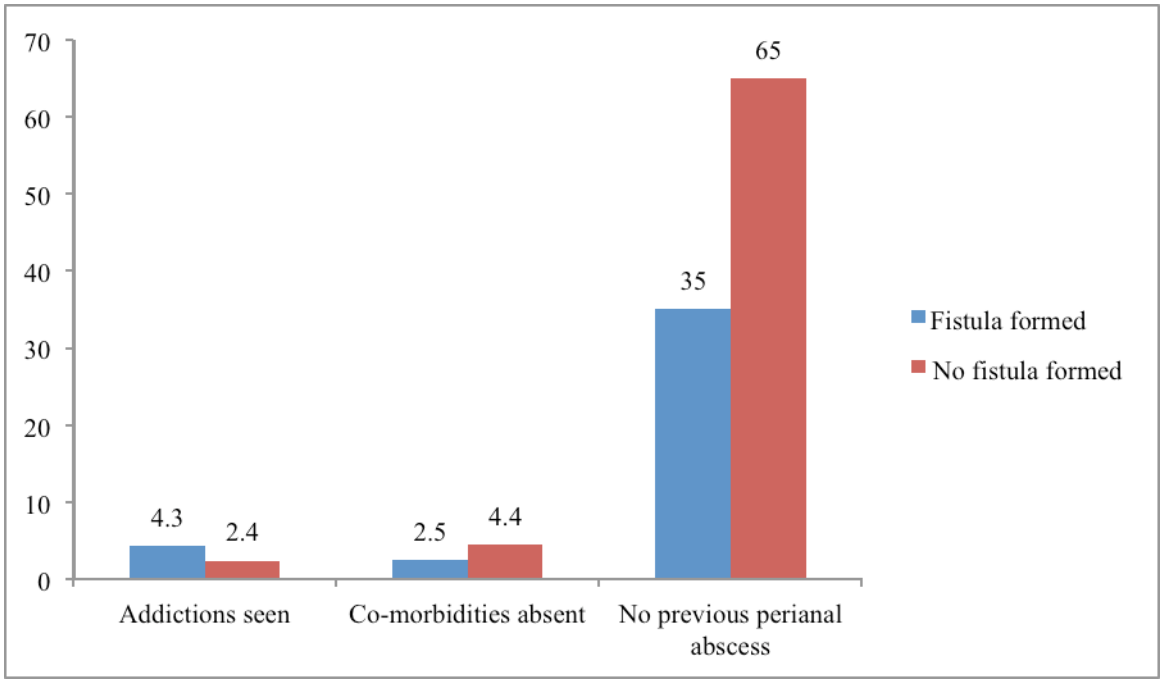
Education wise with No school & Primary education 26.7%(4) developed fistula compared to 33.3%(10) in secondary and above education with insignificant P value 0.64.

Education					
No school & Primary	4 (26.7)	11 (73.3)	1	0.20, 1	0.64
Secondary & above	10 (33.3)	20 (66.7)	1.4 (0.3-5.4)		

Work wise in sedentary to moderate work category 35.7%(5) developed fistula compared to 29%(9) in heavy work group with insignificant P value of 0.65.

Occupation					
Sedentary to moderate	5 (35.7)	9 (64.3)	1.3 (0.3-5.1)	0.20, 1	0.65
Heavy work	9 (29)	22 (71)	1		

Personal features of study participants based on the outcome (fistula formation)



Addictions like alcohol, tobocco and smoking patients 33.3%(9) developed fistula compared to 27.8%(5) patients without addictions with insignificant P value of 0.69 .

Addictions					
Yes	9 (33.3)	18 (66.7)	1.3 (0.4-4.7)	0.15, 1	0.69
No	5 (27.8)	13 (72.2)	1		

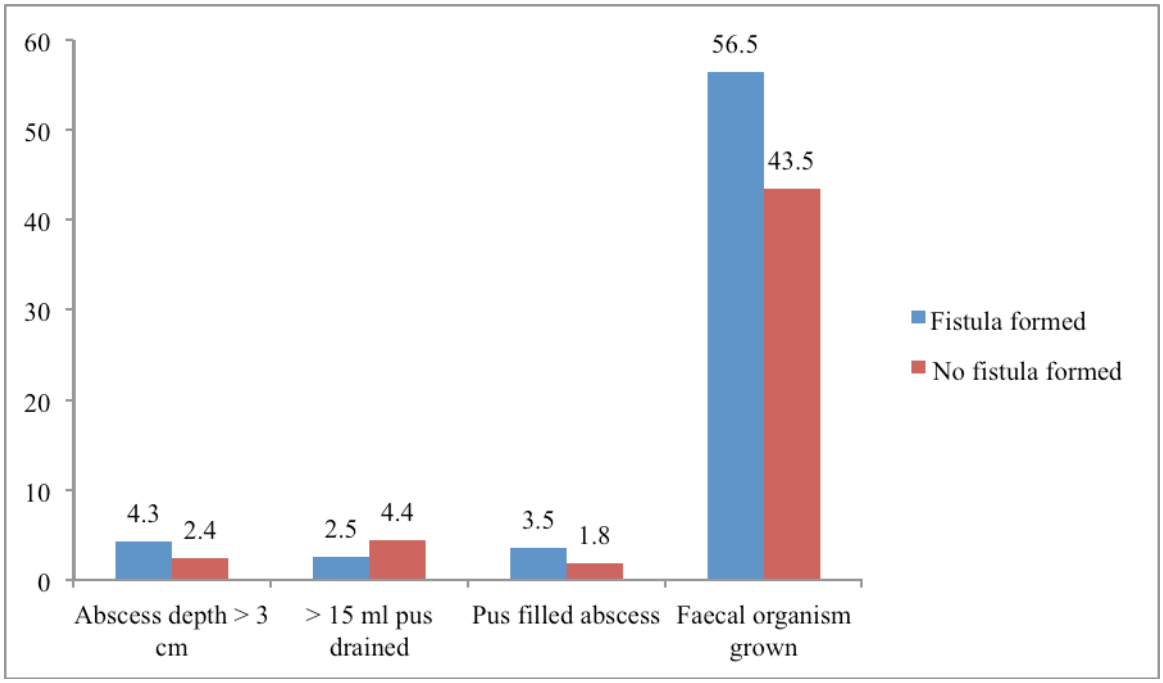
In patients with co-morbitities like DM,HT or HIV patients 27.3%(3) develop fistula compared to 32.4%(11) in without co-morbid patients.

Co-morbidity					
Yes	3 (27.3)	8 (72.7)	1	0.1, 1	0.75
No	11 (32.4)	23 (67.6)	1.3 (0.3-5.7)		

Previous history of perianal abscess also not related to fistula formation with insignificant P value of 0.15.

Previous perianal abscess					
Yes	0	4 (100)	NA	2.05, 1	0.15
No	14 (35)	26 (65)			

Abscess features of study participants based on the outcome (fistula formation)



Abscess cavity depth of >3cm after drainage associated with fistula formation 42.9%(12) compared to 11.8%(2) in patients with<3cm cavity with significant p value of 0.03.

Depth of abscess after drainage in cm					
≥ 3 cm	12 (42.9)	16 (57.1)	5.6 (1-29.4)	4.77, 1	0.03*
< 3 cm	2 (11.8)	15 (88.2)	1		

When >15ml of pus drained associated with fistula formation 52.9%(9) compared to 17.9%(5) in <15 ml pus drained patients with significant p value of 0.01.

Amount of pus drained in ml					
> 15 ml	9 (52.9)	8 (47.1)	5.2 (1.3-20.1)	6.07, 1	0.01*
≤ 15 ml	5 (17.9)	23 (82.1)	1		

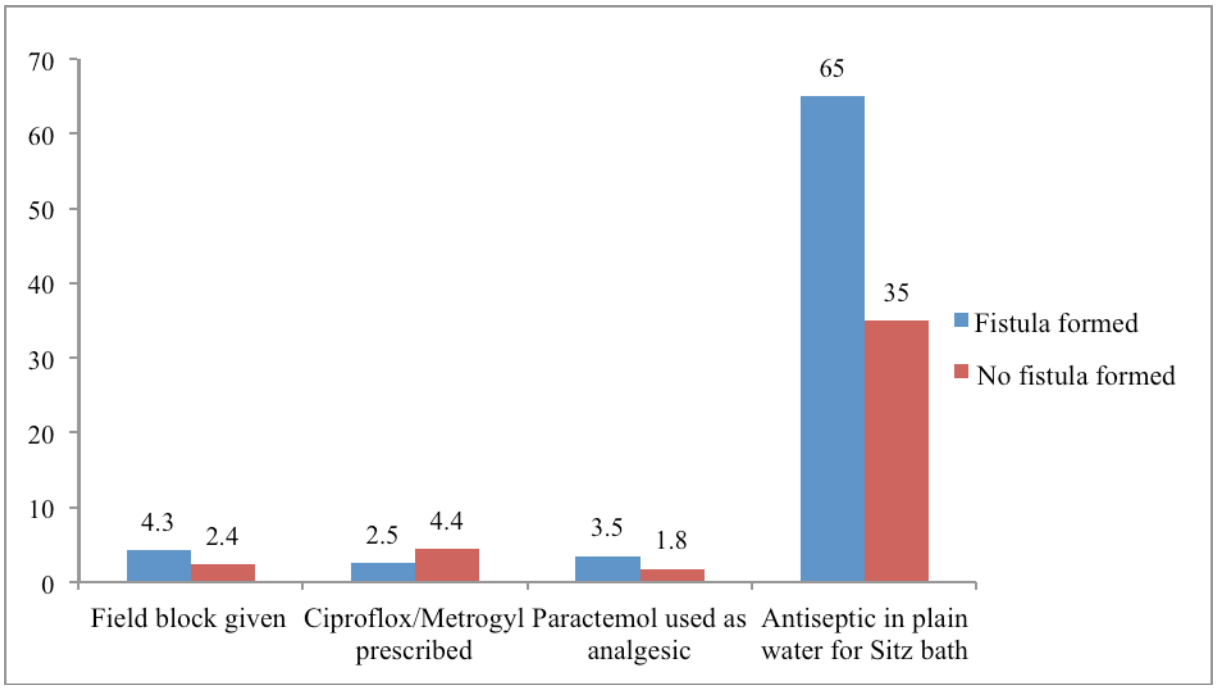
In pus filled abscess cavities 40%(12) develop fistula compared to 13.3%(2) in indurated with pus abscesses with insignificant p value of 0.07

Consistency of abscess					
Pus filled	12 (40)	18 (60)	4.3 (0.8-22.7)	3.31, 1	0.07
Indurated with pus	2 (13.3)	13 (86.7)	1		

Fecal organism in culture associated with 56.5%(13) of fistula formation compared with 4.5%(1) in skin organisms in culture with significant p value of <0.001.

Organism cultured from the pus drained					
Faecal organism	13 (56.5)	10 (43.5)	27.3(3.1-238)	14.1, 1	<0.001*
Skin organism	1 (4.5)	21(95.5)	1		

Treatment features of study participants based on the outcome (fistula formation)



Type of local anesthesia used like local anesthesia or field block does not influence the abscess formation with the insignificant P value of 0.78

1	Type of local anaesthesia used					
	Local anaesthesia	1 (25)	3 (75)	1	0.07, 1	0.78
	Field block	13 (31.7)	28 (68.3)	1.4 (0.1-14.7)		

Type of antibiotic prescribed like Doxycycline, Co-trimoxazole, Ciprofloxacin or ciprofloxacin with Metrogyl didn't significantly affect the fistula formation with P value of 0.25.

2	Type of antibiotic prescribed					
	Cotrimoxazole/Doxy	3 (20)	12 (80)	1	1.29, 1	0.25
	Ciproflox/Metrogyl	11 (36.7)	19 (63.3)	2.3 (0.5-10)		

Type of analgesic drug prescribed like Brufen with paracetamol or paracetamol alone doesn't affect fistula formation with insignificant P value of 0.29.

3	Type of analgesic drug prescribed					
	Paracetamol with Brufen	1 (14.3)	6 (85.7)	1	1.09, 1	0.29
	Paracetamol	13 (34.2)	25 (65.8)	3.1 (0.3-28.7)		

Type of water used for Sitz bath like plain tap water use associated with less fistula formation 4%(1) compared to 65%(13) in antiseptic mixed tap water with significant P value of <0.001.

4	Type of water used for Sitz bath					
	Plain water	1 (4)	24 (96)	1	19.2, 1	<0.001*
	With antiseptic mixed	13 (65)	7 (35)	44.5 (4.9-402)		

NOTE: # The p values given here are based on chi-square (X^2) test, * Statistically significant (p <0.05). OR-Odd's ratio (unadjusted)

Comparison of other parameters of the study participants for fistula formation

Sl. No	Characteristics in mean standard deviation (SD)	Fistula formation after 3 months of follow up		T value, degrees of freedom	p value#
		Yes	No		
1	Age in years	37.7 (13.2)	38.2 (12.8)	-1.05, 43	0.91
2	BMI	20.7 (3)	22 (2.8)	-1.37, 43	0.17
3	Hb in g%	11 (1.9)	11 (1.7)	-0.11, 43	0.91
4	No of days since the perianal pain	2.9 (0.6)	2.7 (1.2)	0.711. 43	0.48
5	No of days since the fever	1.9 (0.6)	2 (0.8)	-0.15, 43	0.87
6	Abscess distance from anal verge	3.1(0.6)	3.3 (0.9)	-0.75, 43	0.45
7	Abscess depth after drainage (cm)	3.1 (0.6)	2.7 (0.9)	1.71, 43	0.09
8	Amount of pus drained (ml)	21.3 (11)	13.4(12.5)	2.01, 43	0.05*
9	Wound Healed in Days	30.6 (9.9)	25.3 (8.9)	1.79, 43	0.08

NOTE: # The p values given here are based on unpaired t test, * Statistically significant (p<0.05).

While comparing means of Age in years, BMI, Hb in gms%, No of days since the perianal pain, No of days since the fever, Abscess distance from anal verge, Abscess depth

after drainage (cm) and Wound Healed in Days doesn't significantly corelate fistula formation except mean Amount of pus drained (ml) was associated with significantly(P=0.05) fistula formation.

Mean amount of pus drained (ml) is 21.3ml(11%) in fistula formation compared to 13.4ml(12.5%) with significant P value of 0.05.

DISCUSSION

In comparission with Lohsiriwat et al study who reported 31% of fistula formation following incision and drainage, In our study also we found 31% of fistula formation which is same as they reported. But in our population age < 40 years , Diabetic Status and antibiotic administration doesn't affect the incidence of fistula formation as they reported.

As Ommer et al reported avoiding cytotoxic antiseptics and using plain tap water results in statistically significant reduction in fistula formation.in our study($P<0.001$).

As reported in other studies fecal organisms in pus culture results in significant chance of fistula formation compared to skin organism in culture.($P<0.001$)

In our study we also found that depth of abscess cavity >3 cms associated with increased chance of fistula formation compared to the depth of < 3ml ($P<0.03$)

We also found that amount of pus drained >15 ml associated with increased chance of fistula formation compared to pus drained <15 ml ($P<0.01$).

In this study we found that age < 40 years, Gender, Rural or Urban residence, Educational status, Occupation, Sunstance addictions, Co-morbitities, Previous perianal abscess history, Antibiotic used and Analgesics used didn't influence the fistula in ano formation.

CONCLUSION

We conclude that Depth of abscess cavity, amount of pus drained and Fecal organism in culture increases the chance of fistula formation. Where as Plain tap water use for sitz bath redues the chance for fistula formation.

REFERENCES:-

1) Adamo K1, Sandblom G2, Brännström F3, Strigård K3. Prevalence and recurrence rate of perianal abscess-a population-based study, Sweden 1997-2009. Int J Colorectal Dis. 2016 Jan 14. [Epub ahead of print]
2) Juth Karlsson A1, Salö M2, Stenström P2. Outcomes of Various Interventions for First-Time Perianal Abscesses in Children. Biomed Res Int. 2016;2016:9712854. doi: 10.1155/2016/9712854.
3) Amato A1, Bottini C2, De Nardi P3, Giamundo P4, Lauretta A5, Realis Luc A6, Tegon G7, Nicholls RJ8. Evaluation and management of perianal abscess and anal fistula: a consensus statement developed by the Italian Society of Colorectal Surgery (SICCR). Tech Coloproctol. 2015 Oct;19(10):595-606. doi: 10.1007/s10151-015-1365-7.
4) Takiyama H1, Kazama S2, Tanoue Y2, Yasuda K2, Otani K2, Nishikawa T2, Tanaka T2, Tanaka J2, Kiyomatsu T2, Hata K2, Kawai K2, Nozawa H2, Miyagawa T3, Yamada D3, Yamaguchi H2, Ishihara S2, Sunami E2, Watanabe T2. Efficacy of magnetic resonance imaging in the diagnosis of perianal hidradenitis suppurativa, complicated by anal fistulae: A report of two cases and review of the literature. Int J Surg Case Rep. 2015;15:107-11. doi: 10.1016/j.ijscr.2015.08.028.
5) Akkapulu N1, Dere Ö1, Zaim G1, Soy HE1, Özmen T1, Doğrul AB1. A retrospective analysis of 93 cases with anorectal abscess in a rural state hospital. Ulus Cerrahi Derg. 2014 Oct 20;31(1):5-8. doi: 10.5152/UCD.2014.2453.

6) Niyogi A1, Agarwal T, Broadhurst J, Abel RM. Management of perianal abscess and fistula-in-ano in children. Eur J Pediatr Surg. 2010 Jan;20(1):35-9. doi: 10.1055/s-0029-1241878.

7) Sözener U1, Gedik E, Kessaf Aslar A, Ergun H, Halil Elhan A, Memikoğlu O, Bulent Erkek A, Ayhan Kuzu M. Does adjuvant antibiotic treatment after drainage of anorectal abscess prevent development of anal fistulas? A randomized, placebo-controlled, double-blind, multicenter study. Dis Colon Rectum. 2011 Aug;54(8):923-9. doi: 10.1097/DCR.0b013e31821cc1f9.

8) Lohsiriwat V1, Yodying H, Lohsiriwat D. Incidence and factors influencing the development of fistula-in-ano after incision and drainage of perianal abscesses. J Med Assoc Thai. 2010 Jan;93(1):61-5.

9) Malik AI1, Nelson RL, Tou S. Incision and drainage of perianal abscess with or without treatment of anal fistula. Cochrane Database Syst Rev. 2010 Jul 7;(7):CD006827. doi: 10.1002/14651858.CD006827.pub2.

10) Ho YH1, Tan M, Chui CH, Leong A, Eu KW, Seow-Choen F. Randomized controlled trial of primary fistulotomy with drainage alone for perianal abscesses. Dis Colon Rectum. 1997 Dec;40(12):1435-8.

11) Slauf P, Antoš F, Marx J. [Acute periproctal abscesses]. Rozhl Chir. 2014 Apr;93(4):226-31.

12) Ommer A1, Herold A, Berg E, Fürst A, Sailer M, Schiedeck T. German S3 guideline: anal abscess. Int J Colorectal Dis. 2012 Jun;27(6):831-7. doi: 10.1007/s00384-012-1430-x. Epub 2012 Feb 24.

Name	Age	Sex	OP / IP Number	Residence	Education	Work / Job	Addiction	Co-Morbid Conditions	Weight (Kgs	Height (cm)	Hb %	Previous Perianal Abscess	how many times abscess previously
Saminathan	45	M	125899	Urban	Secondary	Cooley	Alcohol, Smoking	HT	50	162	11	Yes	1
Sundarrajan	45	M	1125681	Rural	HigherSecondary	Farmer	Alcohol	DM/HT	51	158	13	No	
Chinnadurai	73	M	1122411	Rural	Degree Holder	Vegetable Shop Owner	Alcohol, Smoking	DM	65	170	10.6	No	
Lakshiammal	40	F	121861	Urban	Secondary	Cooley	Nil	DM	60	153	8.6	No	
Palaniammal	53	F	82251	Rural	Secondary	Housewife	Tobacco Chiewing	DM	55	158	11	Yes	2
Pandikumar	32	M	28052	Semiurban	HigherSecondary	Cooley	Alcohol		59	170	11	No	
SARAVANAKUMAR	42	M	103031	Rural	HigherSecondary	Cooley	Alcohol, Smoking	HT	70	175	11.6	No	
ALAGAR	44	M	119823	Semiurban	Secondary	Farmer	Nil		70	175	13.5	No	
VASANTHI	28	F	1121624	Semiurban	Primary	Cooley	Nil		45	162	10	No	
IRFAN	27	M	180723	Rural	HigherSecondary	Farmer	Alcohol		61	164	10.3	No	
SADAM HUSEN	26	M	92417	Urban	Degree Holder	Driver	Smoking		48	166	14.4	No	
PRAKASH	30	M	206248	Urban	Secondary	Shop owner	Nil		66	171	12.3	No	
DINESH	16	M	47162	Semiurban	Primary	Dobby	Nil		44	164	13	No	
NAGALAKSHMI	55	F	55459	Rural	Primary	Cooley	Tobacco Chiewing	DM/HT	71	164	10	Yes	1
BOSE	57	M	223042	Semiurban	Secondary	Cooley	Alcohol		74	174	9.7	No	
KARTHIK	27	M	1251112	Rural	Secondary	Cooley	Alcohol, Smoking		63	169	12.6	No	
MAHENDRAN	30	M	1122531	Rural	Secondary	Cooley	Smoking		60	167	13.1	No	
VELLAIYAMMAL	28	F	1134211	Semiurban	Primary	Cooley	Nil		60	162	8.7	No	
MATHANRAJ	38	M	23984	Rural	No Schooling	Cooley	Alcohol		62	163	11	No	
PITCHAIMUTHU	41	M	117634	Rural	Secondary	Electrician	Smoking	HIV	53	168	14.2	No	
BOSEPANDI	54	M	1149623	Urban	Primary	Cooley	Alcohol		75	171	8.7	No	
RAJASEKAR	33	M	113671	Urban	HigherSecondary	Shop owner	Alcohol		68	165	11.3	Yes	1
PERIYAKARUPPAN	48	M	228413	Urban	Degree Holder	Shop Keeper	Alcohol, Smoking	HT	70	168	10.3	No	
MAGESWARI	37	F	1214532	Semiurban	HigherSecondary	Farmer	Smoking		58	161	9.4	No	
PACHAIYAPPAN	47	M	1137421	Semiurban	Primary	Cooley	Nil		77	173	14.7	No	

Name	Age	Sex	Abscess Position (Clock position	Abscess distance from Anal verge	Abscess Size approximately (cms)	Abscess Depth After Drainage approximately (cms)	Amount of pus drained approximately (ml)	I & D Dimension approximately (cms)	Consistency of abscess	Types of Anesthesia
Saminathan	45	M	3	3	2*2	3	8	2*2	Pus Filled	Field Block
Sundarrajan	45	M	2	4	4*3	3	25	4*3	Pus Filled	Field Block
Chinnadurai	73	M	3	4	2*2	2	1	2*2	Indurated	Local Anesthesia
Lakshiammal	40	F	8	3	3*3	4	20	3*3	Pus Filled	Field Block
Palaniammal	53	F	6	3	3*2	3	15	3*2	Pus Filled	Field Block
Pandikumar	32	M	4	4	4*3	2	10	4*3	Indurated with Pus	Field Block
SARAVANAKUMAR	42	M	1	2	4*3	3	20	4*3	Pus Filled	Field Block
ALAGAR	44	M	5	5	4*3	4	30	4*3	Pus Filled	Field Block
VASANTHI	28	F	8	3	3*3	3	15	3*3	Pus Filled	Field Block
IRFAN	27	M	10	3	4*3	3	10	4*3	Indurated with Pus	Field Block
SADAM HUSEN	26	M	8	4	3*2	4	15	3*2	Pus Filled	Field Block
PRAKASH	30	M	12	3	2*2	2	5	2*2	Pus Filled	Field Block
DINESH	16	M	10	5	3*2	2	4	3*2	Indurated with Pus	Local Anesthesia
NAGALAKSHMI	55	F	2	3	4*3	4	30	4*3	Pus Filled	Field Block
BOSE	57	M	12	3	3*2	2	8	3*2	Pus Filled	Field Block
KARTHIK	27	M	8	5	4*4	3	15	4*4	Indurated with Pus	Field Block
MAHENDRAN	30	M	5	2	3*2	2	6	3*2	Indurated with Pus	Field Block
VELLAIYAMMAL	28	F	2	4	3*2	2	8	3*2	Pus Filled	Field Block
MATHANRAJ	38	M	7	4	4*4	4	50	4*4	Pus Filled	Field Block
PITCHAIMUTHU	41	M	9	3	3*2	2	2	3*2	Indurated with Pus	Local Anesthesia
BOSEPANDI	54	M	4	2	2*2	1	0	2*2	Indurated	Field Block
RAJASEKAR	33	M	12	2	2*2	1	1	2*2	Pus Filled	Field Block
PERIYAKARUPPAN	48	M	2	4	3*3	2	6	3*3	Indurated with Pus	Field Block
MAGESWARI	37	F	11	3	4*4	3	20	4*4	Indurated with Pus	Field Block
PACHAIYAPPAN	47	M	4	3	3*3	3	15	3*3	Pus Filled	Field Block

Name	Age	Sex	Wound Sitz bath solution	Antibiotic Prescribed	Analgesic Prescribed	Pus Culture & Sensitivity	Wound Healed in Days	Presence of fistula after 3 months	If fistula present single or multiple
Saminathan	45	M	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	35	No	
Sundarrajan	45	M	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	45	yes	single
Chinnadurai	73	M	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	15	No	
Lakshiammal	40	F	Plain Water	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	32	No	
Palaniammal	53	F	Plain Water	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	20	No	
Pandikumar	32	M	Plain Water	Ciprofloxacin	Paracetamol	Fecal Organism	25	No	
SARAVANAKUMAR	42	M	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	28	No	
ALAGAR	44	M	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	35	No	
VASANTHI	28	F	Plain Water	Cotrimoxazole	Paracetamol	Skin Organisam	26	No	
IRFAN	27	M	Plain Water	Ciprofloxacin	Brufen+Paracetamol	Skin Organisam	28	No	
SADAM HUSEN	26	M	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	34	No	
PRAKASH	30	M	Plain Water	Doxycycline	Paracetamol	Skin Organisam	22	No	
DINESH	16	M	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	20	No	
NAGALAKSHMI	55	F	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	30	No	
BOSE	57	M	Plain Water	Cotrimoxazole	Paracetamol	Skin Organisam	15	No	
KARTHIK	27	M	Plain Water	Cotrimoxazole	Paracetamol	Skin Organisam	34	No	
MAHENDRAN	30	M	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	23	No	
VELLAIYAMMAL	28	F	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	21	No	
MATHANRAJ	38	M	Plain Water	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	44	No	
PITCHAIMUTHU	41	M	Plain Water	Cotrimoxazole	Paracetamol	Fecal Organism	14	No	
BOSEPANDI	54	M	Plain Water	Ciprofloxacin	Brufen+Paracetamol	Skin Organisam	12	No	
RAJASEKAR	33	M	Plain Water	Doxycycline	Paracetamol	Skin Organisam	14	No	
PERIYAKARUPPAN	48	M	Plain Water	Cotrimoxazole	Brufen+Paracetamol	Skin Organisam	19	No	
MAGESWARI	37	F	Plain Water	Ciprofloxacin	Brufen+Paracetamol	Skin Organisam	27	No	
PACHAIYAPPAN	47	M	Plain Water	Ciprofloxacin	Paracetamol	Skin Organisam	21	No	

Name	Age	Sex	OP / IP Number	Residence	Education	Work / Job	Addiction	Co-Morbid Conditions	Weight (Kgs	Height (cm)	Hb %	Previous Perianal Abscess	how many times abscess previously
Sivalingam	35	M	37826	Urban	Secondary	Cooley	Alcohol, Smoking		62	156	9.4	No	
Logesh	15	M	128259	Semiurban	Primary	Farmer	Smoking		55	168	11.4	No	
Indirani	40	F	127865	Semiurban	Primary	Cooley	Nil		47	157	9.2	No	
Jothy	44	F	11671	Urban	Primary	Cooley	Nil		48	154	9	No	
Marisamy	53	M	79	Semiurban	Secondary	Driver	Smoking	HT	59	169	12	No	
Vedasamy	50	F	26888	Urban	Primary	Cooley	Nil		63	158	10	No	
KESAVAN	34	M	110261	Urban	Primary	Cooley	Smoking		45	167	14	No	
SUBRAMANI	37	M	31265	Urban	Secondary	Farmer	Alcohol, Smoking		52	173	10.4	No	
SURESHKUMAR	14	M	75587	Rural	Secondary	Cooley	Nil		49	168	12	No	
PANDI	45	M	83373	Rural	Primary	Cooley	Alcohol, Smoking		70	169	13.3	No	
KANDASAMY	65	M	1136835	Rural	HigherSecondary	Farmer	Alcohol	DM	65	170	9.8	No	
NAGALAKSHMI	36	F	47347	Semiurban	HigherSecondary	Housewife	Nil		61	158	11	No	
DIVYA	23	F	1139440	Rural	Primary	Housewife	Nil		40	151	9.3	No	
SATHISHKUMAR	25	M	223202	Urban	Secondary	Cooley	Nil		64	168	9.2	No	
PERUMAL	50	M	124861	Semiurban	HigherSecondary	Electrician	Nil		68	171	13.3	No	
KALIAMMAL	26	F	1432112	Rural	No Schooling	Cooley	Nil		50	154	8.8	No	
RAMU	27	M	1218635	Semiurban	Secondary	Dobby	Nil		49	167	9.8	No	
ARIYAPPAN	36	M	1125653	Rural	Secondary	Driver	Alcohol, Smoking		67	170	11.1	No	
MUTHAIAH	24	M	47352	Semiurban	HigherSecondary	Driver	Nil		47	163	12.7	No	
VINITHA	39	F	45671	Rural	Degree Holder	Housewife	Tobacco Chiewing		55	153	8	No	

Name	Age	Sex	No of days since the perianal pain	No of days since the Fever	Abscess Position (Clock position	Abscess distance from Anal verge	Abscess Size approximately (cms)	Abscess Depth After Drainage approximately (cms)	Amount of pus drained approximately (ml)	I & D Dimension approximately (cms)	Consistency of abscess	I & D Done under which type of Anesthesia
Sivalingam	35	M	3	2	5	2	2*2	3	10	2*2	Pus Filled	Field Block
Logesh	15	M	3	3	11	4	3*2	2	4	2*2	Indurated with Pus	Field Block
Indirani	40	F	5	3	7	5	3*3	3	12	3*3	Indurated with Pus	Field Block
Jothy	44	F	2	1	9	2	2*2	2	5	2*2	Pus Filled	Field Block
Marisamy	53	M	2	1	11	3	4*3	4	30	4*3	Pus Filled	Field Block
Vedasamy	50	F	2	2	10	4	3*3	2	6	3*3	Indurated with Pus	Field Block
KESAVAN	34	M	3	2	4	3	3*3	3	20	3*3	Pus Filled	Field Block
SUBRAMANI	37	M	2	2	4	2	3*2	3	10	3*2	Pus Filled	Field Block
SURESHKUMAR	14	M	2	2	2	3	3*3	4	40	3*3	Pus Filled	Field Block
PANDI	45	M	3	2	11	4	3*3	2	6	3*3	Indurated with Pus	Local Anesthesia
KANDASAMY	65	M	3	1	11	3	4*3	3	18	4*3	Pus Filled	Field Block
NAGALAKSHMI	36	F	2	2	7	4	3*3	4	20	3*3	Pus Filled	Field Block
DIVYA	23	F	3	2	8	4	3*2	3	10	3*2	Pus Filled	Field Block
SATHISHKUMAR	25	M	2	2	3	2	2*2	2	4	2*2	Pus Filled	Field Block
PERUMAL	50	M	3	2	10	3	4*3	4	40	4*3	Pus Filled	Field Block
KALIAMMAL	26	F	3	2	11	3	4*3	2	10	4*3	Indurated with Pus	Field Block
RAMU	27	M	3	1	1	3	3*3	3	20	3*3	Pus Filled	Field Block
ARIYAPPAN	36	M	4	3	2	4	4*3	4	35	4*3	Pus Filled	Field Block
MUTHAIAH	24	M	5	3	3	3	5*4	4	50	5*4	Pus Filled	Field Block
VINITHA	39	F	3	3	9	3	4*3	3	25	4*3	Pus Filled	Field Block

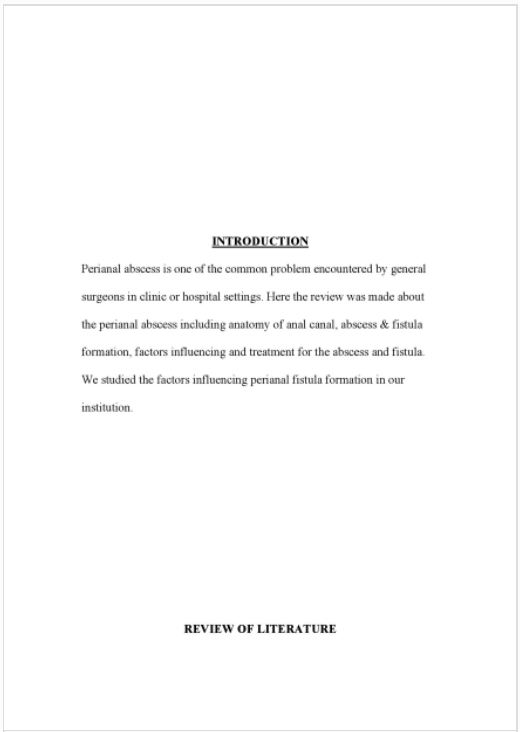
Name	Age	Sex	Wound Sitz bath solution	Antibiotic Prescribed	Analgesic Prescribed	Pus Culture & Sensitivity	Wound Healed in Days	Presence of fistula after 3 months	If fistula present single or multiple
Sivalingam	35	M	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	40	yes	Single
Logesh	15	M	Antiseptic solution mixed	Ciprofloxacin	Brufen+Paracetamol	Skin Organisam	25	No	
Indirani	40	F	Antiseptic solution mixed	Ciprofloxacin	Brufen+Paracetamol	Fecal Organism	40	No	
Jothy	44	F	Antiseptic solution mixed	Doxycycline	Paracetamol	Skin Organisam	25	No	
Marisamy	53	M	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	30	yes	Single
Vedasamy	50	F	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Skin Organisam	15	No	
KESAVAN	34	M	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	26	yes	Single
SUBRAMANI	37	M	Antiseptic solution mixed	Cotrimoxazole	Paracetamol	Fecal Organism	19	yes	Single
SURESHKUMAR	14	M	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Fecal Organism	45	yes	Single
PANDI	45	M	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Skin Organisam	24	yes	Single
KANDASAMY	65	M	Antiseptic solution mixed		Paracetamol	Fecal Organism	40	yes	Single
NAGALAKSHMI	36	F	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Skin Organisam	26	No	
DIVYA	23	F	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Fecal Organism	35	yes	Single
SATHISHKUMAR	25	M	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Skin Organisam	15	No	
PERUMAL	50	M	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	40	yes	Single
KALIAMMAL	26	F	Antiseptic solution mixed	Ciprofloxacin	Brufen+Paracetamol	Fecal Organism	20	yes	Single
RAMU	27	M	Antiseptic solution mixed	Cotrimoxazole	Paracetamol	Fecal Organism	18	yes	Single
ARIYAPPAN	36	M	Antiseptic solution mixed	Ciprofloxacin	Paracetamol	Fecal Organism	25	yes	Single
MUTHAIAH	24	M	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Skin Organisam	45	No	
VINITHA	39	F	Antiseptic solution mixed	Ciprofloxacin+Metronidazole	Paracetamol	Fecal Organism	22	yes	Single

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the r information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	221411108 Ms Gensur JAYAKUMA...
Assignment title:	2015-2015 plagiarism
Submission title:	PERIANAL ABSCESS
File name:	Pliagirism.doc
File size:	8.75M
Page count:	81
Word count:	9,718
Character count:	56,141
Submission date:	27-Sep-2016 01:19PM
Submission ID:	711638995



INTRODUCTION

Perianal abscess is one of the common problem encountered by general surgeons in clinic or hospital settings. Here the review was made about the perianal abscess including anatomy of anal canal, abscess & fistula formation, factors influencing and treatment for the abscess and fistula. We studied the factors influencing perianal fistula formation in our institution.

REVIEW OF LITERATURE